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ABSTRACT

Reported is an evaluation of a program providing information and services to first-time parents and their children from the third trimester of pregnancy until the children were three years of age. Interventions were designed to provide educational guidance to parents, to make parenting less stressful and more pleasurable, and to help parents become better teachers of their children. Findings indicated that, in contrast to a comparison group, children of participating parents (1) consistently scored significantly higher on measures of intelligence, achievement, auditory comprehension, verbal ability, and language ability and (2) demonstrated significantly more aspects of positive social development. Parents participating in New Parents as Teachers (NPAT) were significantly more likely to have had their child's hearing tested by the age of three years than were parents of comparison children, and were significantly more knowledgeable about child development, the importance of physical stimuli, and about discipline. Additional significant findings were found concerning the relationship between traditional measures of risk and measures of intelligence, achievement, and language development; staff ratings of the quality of parent participation in the NPAT project; frequency of parent participation in home visits; parents' attitudes about the responsiveness of their school district; and participants' satisfaction with project services. Appendixes include 11 data tables plus supplementary materials on the tests and data analysis methods used in the study. (RH)

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EVALUATION REPORT

NEW PARENTS AS TEACHERS PROJECT

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Missouri Department of Elementary & Secondary Education

Arthur L. Mallory, Commissioner of Education

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EVALUATION REPORT

NEW PARENTS AS TEACHERS PROJECT

Evaluation report prepared by
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ARTHUR L. MALLORY
COMMISSIONER OF EDUCATION

October 1985

Dear Friends:

Missouri's New Parents as Teachers Project, sponsored by the State Department of Elementary and Secondary Education and implemented by the Farmington, Ferguson-Florissant, Francis Howell, and Independence School Districts, clearly demonstrates that it pays dividends--educationally and socially--for parents of very young children, working in concert with a public school system, to have access to timely information and guidance on their children's development.

The following report is the result of the efforts of many people to prove the value of good parent education. Special thanks are due to The Danforth Foundation for providing the technical assistance of Dr. Burton White, and particularly to Jane Paine of the Foundation for her strong leadership and commitment to this project; to Burton White for his excellent guidance; to the Commissioner's Committee on Parents as Teachers, Carolyn Losos, Chairman, for its strong legislative support and financial assistance for parent educator training; and to Duane Christensen of Maritz Inc. for the production of the slide-tape presentation on the New Parents as Teachers Program.

If you have questions regarding this project or related resources, please contact Deborah Murphy, Director of Early Childhood Education, or Mildred Winter, Project Director, Post Office Box 480, Jefferson City, Missouri 65102. They will be pleased to respond to your inquiries.

It is my hope this evaluation report will be of value to those interested in establishing similar programs. The benefits to young children and their families, to school systems, and to society are limited only by our imagination and vision. The results of this project show that the best and wisest expenditure for education may be that spent for effective early parent education.

Sincerely yours,

Arthur L. Mallory

Commissioner of Education

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I. INTRODUCTION

The "New Parents as Teachers" (NPAT) program was organized in 1981 by the Missouri Department of Elementary and Secondary Education. The program was an outgrowth of the Department's history of commitment to early childhood education. Early education for both parents and children has been a priority for Commissioner of Education Arthur Mallory and the State Board of Education since 1972. NPAT's initial impetus came from the 1981 "Conference for Decision Makers on Early Childhood and Parent Education-- Direction for the Eighties." Research evidence on improving the quality of the educational system for children during the earliest years of life was presented by Dr. Burton White, former Director and Principal Investigator for the Harvard Preschool Project.

Research has shown that the most rapid period of human development occurs during the first three years of life and that experiences during these years can have profound effects (Bloom, 1964; White, 1971; White and Watts, 1973; White, Kaban and Attanucci, 1979). Professionals generally agree that a focus on the early years of a child's life is critical; they are a time of major impact in a child's development as well as a time when parents are forming and cementing their approaches to child-rearing. Despite this agreement, little systematic information has been available to parents in the day-to-day aspects of child-rearing. The NPAT program was designed to fill this void by providing age-appropriate information on the child's development; by helping parents increase their skills as observers of their child; and by providing guidance in promoting the child's intellectual, language, social, and motor skills development.

The NPAT project was initiated during the 1981-82 school year in four Missouri school districts: Ferguson-Florissant (St. Louis County), Farmington (St. Francois County), Francis Howell (St. Charles County), and Independence (Jackson County). These districts represent a broad spectrum of community characteristics including urban, suburban and rural communities. The program was implemented through the cooperative efforts of the Missouri Department of Elementary and Secondary Education, the four school districts, and The Danforth Foundation of St. Louis. Dr. White, now Director of the Center for Parent Education in Newton, Massachusetts, provides consultative service to the program.

The NPAT project provided families (specifically, first-time parents and their children) a variety of services from the third trimester of pregnancy until the children were three years of age. These services were designed to provide educational guidance to parents to make their job less stressful and more pleasurable and to help them become better teachers of their children. Knowledge of child development was organized according to the seven phases of child development from birth to three years outlined by White in The First Three Years of Life (1975). Services of the NPAT program include provision of the following:

- Information on child development and guidance before the baby is born to help expectant parents prepare for the important job of being parents.

- Information about things to look for and expect as the child grows and develops, plus guidance in fostering the child's intellectual, language, social, and motor-skill development.

- Periodic checkups of the child's educational and sensory development (hearing) to detect possible handicaps which can interfere with growth and development. If serious problems are discovered, help is sought from other agencies or professionals.

- Personal visits in the home or at a center by parent educators who are trained in child development.

- Monthly group meetings with other new parents to share experiences and discuss topics of interest.

- A Parent Resource Center, located in a school building, offering learning materials for families and facilities for child care, scheduled as needed.

Despite the fact that the need for a program of this type would be evident even for second-, third- or fourth-time parents, program designers elected to serve only first-time parents for two reasons. First, findings of the Harvard Preschool Project indicated that first-time parents are by far the most eager for the type of support provided by the NPAT program. Second, evaluation of the effectiveness of the program was from the outset an explicit component of the program design. Program effects could more easily be identified on a population of first-time parents and their children than on a population of parents having previous child-rearing experience and children with older siblings.

In spite of growing evidence of the need for parent education and parent support, past research findings about the effectiveness of such programs is not abundant. Some findings have demonstrated mixed and inconclusive results (Stevens, 1978; Crinic, et al., 1983). A number of other studies have shown that parent and early childhood education can result in significant benefits in terms of children's intellectual capability, language development, or social development (Bronfenbrenner, 1974; Garber and Heber, 1977; Consortium for Longitudinal Studies, 1979; Ramey and Haskins, 1981). Additionally, an expanding body of literature substantiating the positive effects of adequate social support systems during times of personal stress -- such as the birth of a first-born child -- and their effects on an adult's psychological well-being exists (Gottlieb, 1981; Haggerty, 1980; Unger and Powell, 1980; Wandersman, Wandersman, and Kahn, 1980; Slaughter, 1983; Kohn and Schooler, 1973).

Many researchers have cautioned, however, about the gaps that exist in our knowledge of the benefits of parent and early childhood education (Pierson et al., 1983; Gray and Wandersman, 1980; Zigler and Seitz, 1980; Clark-Stewart, 1981). In particular, they warn that past research has almost exclusively focused on impoverished and disadvantaged children to the virtual

exclusion of families from diverse economic backgrounds; that evaluation has too frequently been singularly focused on the impact on children's intelligence; and that most experimental or demonstration programs have operated in a university or separate community agency rather than as a part of the public school system -- a system that could provide continuity into the child's school-age years. Both the implementation of the NPAT program as well as the design of the evaluation were responsive to these concerns.

In order to provide useful information to others contemplating implementation of similar programs and to improve the quality and effectiveness of the NPAT program itself, program designers specified that an evaluation of the program would be conducted during the third year of program operation. Research & Training Associates, Inc. was awarded a contract to conduct an independent evaluation of the effectiveness of the NPAT program in achieving its hypothesized outcomes. The results of that evaluation effort are the subject of this report.

II. DESIGN OF THE NEW PARENTS AS TEACHERS EVALUATION

The identification of an evaluation strategy for the New Parents as Teachers Project was largely guided by the fact that no meaningful pretest of project impacts can be obtained from infants, and that maturational effects occur by three years of age even without program treatment. Additionally, the fact that parents were not randomly sampled for participation (although parents were exhaustively recruited from all socioeconomic backgrounds) predicated a quasi-experimental design. Project effectiveness was to be estimated with a treatment/comparison group design utilizing posttests of the child's ability.

Six outcomes had been hypothesized to result from participation in the NPAT program and formed the basis for the evaluation of program effectiveness:

(1) Children of participating parents will demonstrate better intellectual and language development as compared to a comparison group or to the normed group of nationally-representative children;

(2) Children of participating parents will demonstrate more positive social development as compared to a comparison group of children;

(3) Children of participating parents will demonstrate fewer undetected incidences of handicapping conditions, particularly in hearing, as compared to a comparison group of children;

(4) Participating parents will demonstrate increased knowledge of child development and child-rearing practices;

(5) Participating parents will demonstrate positive feelings about the program's usefulness; and

(6) Participating parents will demonstrate positive attitudes toward the school district.

In addition to evaluating these six outcomes, program designers were interested in investigating several research questions that could be of use in program implementation, including the following questions:

(1) To what extent did early detections of potentially handicapping conditions by NPAT staff reduce the size of the "at-risk" population at age three?

(2) Are traditional measures of "at-risk" family characteristics (e.g., single-parent households, parents' age and education, receipt of public assistance, quantity of alternate care, etc.) related to a child's ability at age three?

(3) Is parent knowledge of child development related to the child's ability at age three?

(4) Is the extent to which parents participate in project activities related to the child's performance at age three?

(5) Do parents with certain background and family characteristics tend to be "better" NPAT participants?

INSTRUMENTATION

The evaluation was primarily designed to assess the impact of NPAT participation on children's cognitive ability, language development, and social development, and on parents' knowledge of developmental stages and appropriate child-rearing practices. The following sections discuss the selection or development of instruments for each area of evaluation.

Cognitive Ability

The Kaufman Assessment Battery for Children (KABC) was utilized to assess cognitive development. The KABC is a recently-released individually-administered measure of intelligence and achievement for children from 2.5 - 12.5 years of age. The recent norms for the KABC were based on a 1980 group of children. Definitions of subtests are contained in Appendix A.

Intelligence, as measured by the KABC, is defined in terms of an individual's style of problem-solving and information-processing. The KABC is based on a model of mental processing that includes both sequential and simultaneous processing. "Sequential Processing" refers to solving problems where the emphasis is on the serial or temporal order of stimuli. Subtests in this scale include: "Hand Movements", in which the child performs a series of hand movements in the same sequence as the examiner; and "Number Recall", in which the child repeats a series of digits.

"Simultaneous Processing" refers to the child's ability to integrate components simultaneously and organize them to see the whole picture in order to solve problems. Subtests in this scale include "Magic Window", in which the child identifies a partially visible picture; "Face Recognition", in which the child selects from a group photograph the one or two faces previously exposed; and "Gestalt Closure", in which the child names an object or scene in a partially completed inkblot drawing. The "Simultaneous Processing Scale" and the "Sequential Processing Scale" are combined to obtain a "Mental Processing Composite", a global estimate of intellectual functioning.

The "Achievement Scale" contains measures of what have traditionally been identified as verbal intelligence and general information of facts and school-related skills. It measures abilities that complement the intelligence scales. Subtests included in the Achievement Scale are "Expressive Vocabulary"--naming objects; "Faces and Places"--naming well-known persons, fictional characters, or places; "Arithmetic"--knowledge of numbers and mathematical concepts, counting and computational skills; and "Riddles"--inferring the name of a concrete or abstract concept when given a list of its characteristics.

The Number Recall subtest of the Sequential Processing Scale and the Expressive Vocabulary and Arithmetic subtests of the Achievement Scales are adaptations of tests from conventional intelligence and achievement batteries that the Kaufmans included to provide continuity of measurement.

Language Ability

Zimmerman's Preschool Language Scale (PLS) was selected for assessing language ability because it measures both expressive and receptive language. The PLS has been used with over 500,000 children in programs such as Head Start, Nursery School, and Follow Through, and is currently one of the most widely-used early language assessment tools.

Validity and reliability studies conducted on 5,230 children reveal the acceptable psychometric properties of this scale. Reliability assessed with the split-half method resulted in coefficients ranging from a low of 0.75 to a high of 0.92, with a respectable median coefficient of 0.88. An item analysis demonstrated that item difficulty advances sequentially with age, providing greatest discrimination in the middle of the scale (i.e., years three and four). Studies of concurrent validity demonstrated high correlations with other measures of language ability. Correlational analyses of KABC and PLS scales are contained in Appendix A.

Social Development

In addition to assessing the impact of the NPAT project on cognitive ability, achievement, and language ability, social development was hypothesized as an appropriate outcome measure. Since the program's goals included the development of the child's social competence, the available literature was searched for appropriate measures of social development. Social development is an area that has not been the subject of extensive empirical research; what research is reported is generally based on numerous periods of observation of the child's behavior -- the preferred methodological approach. However, budgetary constraints disallowed this approach.

The one opportunity that afforded itself to observations of the NPAT sample and a comparison group was the testing situation. Although the observation of the child's social development as evidenced in a testing situation was limited to a period of time that generally did not exceed two hours, this period of interaction was expected to be lengthy enough to observe selected behaviors that were hypothesized as measures of the child's social development. Because of the parents' more extensive knowledge of the child's behavior, a second approach to measurement was developed that obtained the parents' assessment of the child's demonstration of specified behaviors. Parents were requested to assess the child in terms of whether he/she demonstrated the described behavior "frequently", "occasionally", or "did not yet" demonstrate the behavior. Again, budget constraints prescribed that the instrument utilized must be self-administered.

A literature review revealed several dimensions that were hypothesized as measures of a child's social development. Ainsworth (1970) and White (1974) hypothesized that (1) the child's ability to use adults as resources, (2) the child's ability to express a wide range of emotions to adults, (3) the child's coping skills, and (4) the child's ability to express pride in accomplishments are important dimensions of social development. These dimensions essentially overlapped with the "Personal-Social" domain of the recently developed Battelle Developmental Inventory (1984), which specifies the relevant dimensions of personal-social development to include: (1) adult interaction, (2) expression of feelings/affect, (3) self-concept, (4) peer interaction, (5) coping, and (6) social role.

Several factors prohibited the use of intact scales for the assessment of social development. First, given the limited opportunities the psychometrists had for observing the child's behavior, only behaviors that were likely to be demonstrated within a testing situation formed relevant dimensions for assessment. Second, given the expected wide range of parents' reading abilities and comprehension of the descriptive behaviors, only items that were simply described were selected. Finally, the need to keep the number of items at a minimum in order to reduce the likelihood of nonresponses resulted in the decision to include certain items on only the psychometrists' rating scale.

Parent Assessment of Social Development

The "personal-social" domain of the Battelle Developmental Inventory (BDI) formed the basis for selecting relevant dimensions for the parents' assessment of their child's social development. The BDI was designed to professionally assess key developmental skills in children from infancy to eight years of age in five domains. Only the "personal-social" domain was relevant to the assessment of social development. The six subdomains of the "personal-social" domain were measured with 85 items--too many to include in a self-administered questionnaire. Key items were delineated from this pool based on expert judgment of relevant items, on clarity of the meaning of the item, and on the perceived capability of a wide range of parents to assess their child on the desired behavior. Overly general items (e.g., "Asserts self in socially acceptable ways") and items unlikely to be understood by all parents were eliminated from consideration. Because the BDI personal-social domain was not utilized in its entirety for the NPAT evaluation, and because the methodology for assessing children on this domain differed from the methodology prescribed by the publishers, caution must be exercised in drawing generalizations about the qualities of the BDI based on the findings reported in this evaluation. However, due to the substantial overlap of the items utilized, we wish to acknowledge the source of those items. A detailed description of these items is contained in the "Results" section that follows.

Psychometrists' Assessment of Social Development

Three dimensions were hypothesized as relevant for assessment of the child's social development by psychometrists testing the child. These dimensions were (1) adult interaction, including "using the adult as an

emotional or instrumental resource" and "capability for expressing emotion to adults", (2) coping skills, and (3) expressing pride in creations, possessions, or actions.

Parent Knowledge

The NPAT project is based on the belief that its activities and resources for parents will provide them with knowledge about child development and sound child-rearing practices helpful for understanding and supporting their children's development. Therefore, parental knowledge about child development research and child-rearing practices was an important project outcome to evaluate. In order to ascertain which aspects of child development and child-rearing practices were critical to evaluate, NPAT project staff were interviewed. Together with Mildred Winter, then State Director of Early Childhood Education, they identified specific areas of parenting information and knowledge that had been stressed in their interactions with parents.

A literature review yielded no existing scales of parent knowledge and effectiveness for the early years relevant to this study. Therefore, utilizing the information gathered from the project staff, a Parent Knowledge Survey Instrument was compiled with a five-point response scale. A draft copy of this instrument was reviewed by the project staff. Final editing was then conducted to insure clarity of items and to keep the number of items (34) reasonable for a scale that was designed to be self-administered by a population of parents with varying levels of reading skills. Items in the instrument included information from each of the seven phases of child development outlined by White (1975) and included in the NPAT project.

Background/Family Characteristics

Family characteristics and background information were obtained through a parent interview format. Relevant background characteristics collected included mother's age at child's birth, father's age at child's birth, mother's education at time of child's birth and at present, father's education at time of child's birth and at present, single- or two-parent household, receipt of public assistance, child's health background during his/her first three years (including delivery complications and child's general development), type and quantity of alternate child care during the first three years, racial identity, job situation at child's birth and at present, and the number of children currently in the family.

Hearing Measure

Past research has demonstrated that by the age of three, children have acquired most of their working language. Research has demonstrated that undetected hearing loss resulting from frequent ear infections at a time that children are rapidly developing language accounts in large part for differential language acquisition by the time children reach school age and are brought to the attention of specialists (Northern and Downs, 1984). Research studies have also suggested a causal relationship between recurrent ear infections and later learning disabilities (Howie, 1980; Zinkus and

Gottlieb, 1980). Certain speech, language, and auditory disorders have been identified as being associated with frequent bouts of ear disease (Rupp, 1979; Needleman, 1977). These findings suggest a critical need for early identification and intervention (Zinkus, Gottlieb, and Schapiro, 1978). Educating parents on the early development of language, the identification of symptoms of ear infections, and the referral of children for medical attention became a major activity of the NPAT project. Because of the importance of these activities, it was desirable to attempt to evaluate their effectiveness.

Evaluating this aspect of the NPAT program, however, proved to be no easy task. Extensive consultations with experts in the field revealed several problems in attempting to evaluate the program's effectiveness in detecting hearing problems using a treatment/comparison group design. First, resource limitations prevented the professional testing of NPAT and comparison group children. The interpretation of results of tympanometer assessments can be difficult, particularly in the winter season when ear infections are common for all children.* Experts agreed that parents should be questioned on their child's history of ear problems and treatment received, including the frequency of wax accumulation, the frequency of fluid in the ear, how frequently the child had been treated by a physician, and whether or not the child's hearing had been tested with an instrument. Additionally, a "whisper test" was conducted at the time of the child's testing.

The "whisper test" was conducted according to the following uniform procedures: during the testing session while the child was involved in a play activity, the parent would move to different locations in the room (approximately 10 feet from the child) and say the child's name three times in a normal voice, and three times in a whisper. The psychometrist would indicate the child's response and any additional comments. The parent was chosen to whisper the child's name because the project staff felt that the child would be more likely to indicate a response to the parent than to a relative stranger.

In the following section, we will describe the sample selection procedures employed in the evaluation of the NPAT program.

SAMPLE SELECTION: AVOIDING THE SELF-SELECTED SAMPLE

One of the most frequent and challenging issues facing evaluators in nonexperimental evaluation designs such as the NPAT evaluation is the issue of potentially non equivalent treatment and comparison groups. If the children or parents in the NPAT program differ significantly from the comparison group children in important ways, these differences are confounded with the project treatment, and therefore compete with project effects in explaining any differences in the testing results.

Recognizing the potential problem of biased participant selection, the designers of the program supervised an exhaustive search for participants among all socioeconomic statuses, parental ages, and family configurations. Thus,

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*Most children were tested in the winter and early spring.

although procedures employed in recruiting parents were not random in a statistical sense, they attempted to be systematic and random in effect. By so doing, it was anticipated that the generalizability of the effects of the program over populations with different characteristics would be possible.

The contract period for the outcome evaluation was limited to one year due to funding constraints. Procedures for the conduct of the evaluation and sample selection thus were constrained by this time frame. In particular, in order to complete the design, testing, analysis, and report-writing phases in a timely fashion, strict limitations were placed on the duration of each phase.

NPAT program participants had been enrolled over a period from December, 1981 through October, 1982. Funding constraints disallowed the possibility of testing each participant; nor was the testing of each participant necessary from a statistical standpoint since the major research questions could be answered as group size approached 100 participants. Thus, 75 NPAT and 75 comparison children were randomly selected for the evaluation.*

The population of NPAT participants for sample selection was constrained to children born within five contiguous months. Months were selected to maximize the sample selection from the months with the highest proportion of families enrolled. Approximately two-thirds of all NPAT participants' children were born in the months of January through May, 1982.** Children to be tested as part of this evaluation were then selected from NPAT children born in these months.

To address the issue of representativeness and to avoid the introduction of biased sample selection, a random sample of participants and nonparticipants was drawn to assure that the characteristics of socioeconomic advantage and high risk occur in the comparison and the NPAT samples with the same frequencies that they do in the general population and in the NPAT population. At each of the four NPAT sites, sample sizes were determined at a rate proportional to the site's representation in the overall population of about 380 participants. For example, if 20 percent of the 380 participants were from one of the identified sites, 20 percent of the NPAT sample was selected from that site's January-May births. Similarly then, 20 percent of the comparison sample was then selected from that community's population of first-born three-year-olds whose parents did not participate in the NPAT program.*** Additionally, sampling frames at each

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*Samples nearing 100 in size are large enough to yield nearly normal sampling distributions for most populations (see Glass and Stanley, 1970 for a discussion).

**Limiting sample selection to this time frame should have little impact on the representativeness of the sample, since there is no a priori reason to believe that characteristics of "high risk" or any other confounding variables are represented with a different frequency in the January-May births than they are in the months prior or subsequent to this period.

***In several instances, the selections from the remaining community members yielded families who had withdrawn from the NPAT project. If the parents did not participate in the project long enough to receive many services, they were left in the "comparison" sampling frame. If they had received some amount of program services, they were considered NPAT participants and were ineligible for selection.

site for both NPAT and comparison populations were stratified on the basis of sex. Samples were drawn from each site proportional to the distribution of girls and boys within those populations.

While the random sampling of NPAT project children was straightforward, given the existence of participation lists, the identification and selection of comparison children was somewhat more difficult. Few sources for identifying three-year-olds (particularly first-born three-year-olds) exist within a community. Random selection is impossible unless the population from which the random sample is drawn can be identified. Governmental agencies provided the NPAT with a listing of first-born children in the January through May time frame for 1982 in project communities. The procedures employed in selecting the comparison group are described by the following:

(1) The list of first-born children was stratified on the basis of the sex of the child.

(2) A random sample of children was selected; these formed the "first random selections" with whom contact was attempted.

(3) Phone numbers provided at the time of the child's birth were called to verify that the address had not changed. In the majority of instances, phone numbers had changed. Thus, area telephone books were consulted to identify new numbers, and other listings with the same last names were called to identify leads in locating the family. (Frequently, family members of the mother or father still resided in the community and provided information on the family's whereabouts.) Where phone numbers were unavailable, letters were sent to the most recent address recorded, providing a toll-free number that could be called to provide their child with a free screening. Knowledgeable staff in the school district were asked to provide any information they might have on the location of selected families. In the smaller communities, the postal service employees provided information on the location of families. Finally, visits were frequently made to the most recent addresses to make any inquiries about the family's whereabouts and to obtain knowledge about whether or not they had moved. In most cases where the family had not been located, this level of intensive inquiry generally revealed information that the family had moved out of the area. If after many attempts no information had been found, it was assumed that the family was no longer in the area.

(4) Because of the unknown mobility of the comparison population and the fact that the sampling list from which we sampled was three years old, a second list of random selections was made to serve as random replacements in the event that members on the first list had moved. Thus, only families which had not moved from the general area since their child's birth were eligible for selection. This constraint was applied to avoid the introduction of bias into the comparison group sample due to mobility factors.

The net results of these efforts indicated that roughly one-half of the randomly selected children on both the first and second lists had moved out of

the area. Of those remaining in the communities, only seven parents refused to participate in the evaluation or to have their children tested. For the NPAT sample, only one parent refused to have his/her child tested. We thus conclude that our selection procedures were successful in obtaining a random sample of first-born three-year-olds in NPAT communities.

Frequently, relationships have been demonstrated between family and background characteristics and project effectiveness (e.g., mother's education and child's ability). Because the evaluation was designed to address the ways in which background characteristics were related to project effectiveness, it was necessary to assure a sufficient amount of variation on these characteristics so that relationships that exist could be detected. Based on the characteristics of all parents enrolled in the program, however, it was expected that some of the traditional characteristics of "high-risk" families would not be well-represented in a random sample of 75 participants. In order to increase the number of children in the sample that came from families with one or more of the traditional characteristics of risk or socioeconomic disadvantage, an additional 18 NPAT children from "high-risk" families were tested to allow for the analysis of ways in which risk characteristics are related to tested outcomes. (The results of these analyses are discussed in Chapter III).

To What Extent Did The Evaluation Avoid a Self-Selected Sample?

Based on features of program design and evaluation it must be reiterated that the samples of children reported on herein differ from a random sample of three-year-olds in three aspects: (1) this sample is only comprised of first-born children, (2) severely handicapped children were eliminated from sample selection, and (3) children who moved from the geographic region in which they were born were not represented in the sample.

The procedures employed by NPAT staff for identifying participants for the NPAT program were designed to enroll participants from various socioeconomic backgrounds and various family configurations in order to test the project's effectiveness in serving all types of families. In order to determine the extent to which the sample of NPAT and comparison group children were similar on dimensions that have frequently been hypothesized as related to expected outcomes (i.e., intelligence, language ability, and achievement), the two groups were compared on background and family characteristics to identify systematic differences. Characteristics investigated included parents' age at child's birth, parents' educational level, single- versus two-parent family, the receipt of public assistance (as an indicator of income level), whether or not additional children had been born, the amount of alternate care the child received, and the frequency of ear fluid problems experienced by the child.

The results of these analyses are contained in Table 1 and indicate that NPAT parents differed from comparison group parents on three characteristics: mothers of NPAT children were somewhat older on average (26 versus 24 years), they had more years of education (14 versus 13 years), and fathers of NPAT children similarly had more years of education (14 versus 13 years). While these differences are significant, they may not be as meaningful as is sometimes the case with age and education variables. The average level of education, for instance,

TABLE 1. COMPARISON OF CHARACTERISTICS OF "RISK" BY NPAT AND COMPARISON GROUP

	Average	Range	Standard Deviation	Probability
Mother's Age at Child's Birth				
NPAT	25.8	16-41	4.6	0.01
COMPARISON	23.5	17-31	3.5	
Father's Age at Child's Birth				
NPAT	27.7	16-41	5.1	ns*
COMPARISON	26.3	20-39	4.1	
Mother's Educational Level at Child's Birth				
NPAT	14.2	10-18	2.1	0.001
COMPARISON	12.8	8-16	1.7	
Father's Educational Level at Child's Birth				
NPAT	14.4	10-22	2.6	0.01
COMPARISON	13.3	10-18	1.8	
Receipt of Financial Assistance				
NPAT	5.5%			ns
COMPARISON	9.7			
Siblings				
NPAT	56.2%			ns
COMPARISON	37.1			
Single- vs Two-Parent Family				
NPAT	5.5%			ns
COMPARISON	11.3			
Frequency of Ear Fluid Problems				
NPAT	4.5%	0-99	12.1	ns
COMPARISON	2.9	0-44	6.5	
Hearing Tested				
NPAT	49.3%			0.001
COMPARISON	14.5			

*Nonsignificant Differences

indicates that both groups received a high school education. The difference is theoretically less meaningful than would have been the case had one group received less than a high school education. Nonetheless, further investigations were conducted to determine whether differences on these characteristics influenced the differences in test scores between NPAT and comparison groups. Additionally, the most recent statistical advance in removing the effects of initial differences between groups to assess "true" differences between groups was employed.*

In summary, project staff were highly successful in obtaining participants from a wide range of family backgrounds. Evaluators were equally successful in obtaining a comparison group from a similarly wide range of family backgrounds. The significant differences that still remain between the two samples despite these attempts to obtain equivalent samples were statistically examined to assess their effects. The results of these analyses are reported in Chapter III of this report.

TEST ADMINISTRATION

In order to assure identical testing situations for both NPAT and comparison children, examiners conducted "blind" testing; that is, they did not know whether individual children were project participants or comparison children. Additionally, testing was conducted at a "neutral" site--one that was equally unfamiliar to both NPAT and comparison children. Parents were advised to bring only their child to be tested, since the presence of other children could affect the quality of the testing situation.

In order to assure as much comparability in the ages at which children were tested as possible, psychometrists scheduled the testing within two weeks of the child's third birthday. Each of the four psychometrists conducting the testing had extensive experience in testing a three-year-old population. Each had administered the KABC to three-year-olds on at least five previous occasions; all had extensive experience in the administration of the PLS.

Seventy-five randomly-selected NPAT children and 69 comparison children appeared at the testing site. Of those appearing for testing, one NPAT child and two comparison children refused testing -- even after testing was rescheduled for another day.

Testing Behavior

Psychometrists rated each child tested on a number of dimensions that could potentially be related to performance in a testing situation, including task persistence, attention span, body movement, attention to directions,

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*The LISREL(Linear Structural Relations) procedure utilizing a latent trait for pre-existing differences was employed. Detailed results of this analysis are contained in Appendix C.

comprehension of directions, lack of verbalization skills, and rapport. Frequency distributions of psychometrists' ratings are contained in Table 1 of Appendix B. On two of the rated dimensions, NPAT children were rated significantly higher than were comparison children. NPAT children were more likely to demonstrate spontaneous verbalization skills and to establish immediate rapport than were comparison children. Conversely, NPAT children were significantly less likely to be reluctant to converse or to be fearful and shy. Furthermore, NPAT children were significantly more likely to demonstrate task persistence than were comparison children, although differences were not as large as were demonstrated by the "verbalization" and "rapport" dimensions. Thus, on items assessing aspects of child development that had been specific foci of the NPAT project--development of the child's verbalization skills and ability to interact with adults--NPAT children differed significantly from the comparison group. NPAT and comparison children did not differ, however, on testing behaviors that might cause test scores to be invalid or unreliable (i.e., comprehension of directions and attention to directions).

The eight items assessing testing behavior were subjected to factor analysis (in order to obtain a smaller set of variables for further correlational analysis) and yielded four dimensions of testing behavior: (1) the lack of body movement, (2) confidence, rapport, and task persistence, (3) comprehension of directions, and (4) lack of verbalization skills (see Table 2 in Appendix B). No significant differences between NPAT and comparison groups existed on these factor scales. Thus, NPAT children and comparison children appeared at the testing session with roughly equivalent testing skills and behaviors.

III. RESULTS

In this section we describe the results of analyses conducted and organized as responses to the major evaluation questions:

- Do NPAT children demonstrate better intellectual and language development as compared to a comparison group or to the national norms?
- Do children of NPAT parents demonstrate more positive social development?
- Do NPAT children have fewer undetected hearing problems?
- Are NPAT parents more knowledgeable about child-rearing practices and child development?
- Were NPAT staff successful in intervening in "at-risk" situations?
- Are characteristics of "risk" related to a child's development at age three?
- Is the extent to which parents participated in the NPAT program related to project outcomes?
- Do parents with certain background characteristics tend to be "better" NPAT participants?
- Does NPAT participation impact on parents' perceptions of the school district?
- Do NPAT participants have positive feelings about the program's usefulness?

DO NPAT CHILDREN DEMONSTRATE BETTER INTELLECTUAL AND LANGUAGE DEVELOPMENT AS COMPARED TO A COMPARISON GROUP OR TO THE NATIONAL NORMS?

The random sample of 75 NPAT children and 69 comparison group children was analyzed to identify differences in performance on scales and subtests of the Kaufman Assessment Battery for Children (KABC) and the Zimmerman Preschool Language Scales (PLS). Difference-of-means testing was conducted to identify statistically significant differences between the two groups. The results of these analyses are contained in Table 2.

Regardless of which measure of intelligence, achievement, auditory comprehension, verbal ability, or language ability is used, NPAT children consistently scored significantly higher than both the nationally normed group and the comparison group on these scales ($p < .001$). NPAT children scored seven scores higher than did comparison children on the Mental

TABLE 2. AVERAGE SCALE AND SUBTEST RESULTS FOR NPAT AND COMPARISON GROUP

	OVERALL MEAN	STANDARD DEVIATION	NPAT SAMPLE	COMPARISON GROUP	DIFFERENCE	SIGNIFICANCE*
KAUFMAN ASSESSMENT BATTERY SCALES						
Sequential Processing (Standard Score)**	104.6	10.6	105.3	103.7	1.6	ns***
Simultaneous Processing(Standard Score)	106.0	14.8	109.8	101.6	8.2	.001
Mental Processing Composite (Standard score)	106.1	12.5	109.1	102.4	6.7	.003
Achievement (Standard Score)	109.6	13.6	114.7	103.8	10.9	<.001
Sequential Processing (Age-Equivalent)	3.5	0.6	3.5	3.4	0.1	ns
Simultaneous Processing (Age-Equivalent)	3.4	0.6	3.5	3.2	0.3	.003
Mental Processing (Age-Equivalent)	3.4	0.5	3.5	3.2	0.3	.001
Achievement (Age-Equivalent)	3.5	0.6	3.7	3.3	0.4	<.001
ZIMMERMAN PRESCHOOL LANGUAGE SCALES						
Auditory Comprehension	24.2	4.8	25.7	22.6	3.1	<.001
Verbal Ability	22.0	5.1	23.4	20.3	3.1	<.001
Language Ability Score	46.2	9.1	49.1	42.9	6.2	<.001
Auditory Comprehension Age	4.0	7.2	4.2	3.8	0.4	<.001
Verbal Ability Age	3.7	7.6	3.9	3.5	0.4	<.001
Language Age	3.9	6.9	4.1	3.7	0.4	<.001

III-2

* Probability levels for statistical significance are commonly accepted at the .05 level. Most findings for this study were found to be significant at the <.001 level. This means that there is a less than one in one-thousand probability that the differences between NPAT and comparison groups were due to chance.
** The KABC has been scaled to yield a mean of 100 and a standard deviation of 15.
*** Nonsignificant Differences

Processing Scale (intelligence) of the KABC; they scored more than 10 scores higher on measures of achievement on the KABC; and they scored six scores higher on the PLS scale of language ability.* (Only on the Sequential Processing Scale of the KABC were differences small and nonsignificant). In fact, adding an additional 18 children from disadvantaged socioeconomic backgrounds to the original 75 NPAT children still yielded NPAT gains in achievement in excess of 10 scores above the comparison group.**

As demonstrated in the results reported in Table 3, differences between the NPAT and comparison group were also maintained for most subtests. Two of the three subscales of the Simultaneous Processing Scale demonstrated significant differences between groups (i.e., Magic Window and Face Recognition). Similarly, three of the four subscales of the Achievement Scale of the KABC demonstrated significant differences (i.e., Expressive Vocabulary, Arithmetic, and Riddles).

Further investigations were conducted to identify possible reasons why the Sequential Processing Scale of the KABC failed to demonstrate the differences in performance between the groups that would be consistent with other measures obtained. The fact that 10 comparison children were eliminated from this analysis due to missing data (compared to only three for the NPAT sample) provided a clue that the Sequential Processing means for the comparison group might be based on a group that differs substantially from the comparison group comprising the means of other measures.

The Kaufman Administration and Scoring Manual specifies that if a child fails all items in a subtest, a score of zero is given. Despite a score of zero on a subtest, a scaled score for the global scale (i.e., Sequential Processing, Simultaneous Processing, and Achievement) can still be obtained. However, if a child fails all items on two subtests in a particular scale, a global standard score is not computed for that child on that scale; the child's score is thus treated as missing data (see Kaufman and Kaufman, Interpretative Manual, p. 158). The impact of this scoring procedure on the extent of missing data proved particularly troublesome for the Sequential Processing Scale, since it is comprised of only two subtests. Thus, the average Sequential Processing score for the comparison group does not contain data from 10 of its lowest-performing children; the average for the comparison group is inflated because of this missing data. In Table 4, the

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*The PLS was the last test administered to children. Psychometrists observed that most children demonstrated signs of fatigue during its administration, and that the scores may be uniformly low for all children. The high correlations between children's scores on the KABC and the PLS (See Table A-2 in Appendix A) indicate, nonetheless, that the ranking of the child's ability relative to other children's performance was preserved even given the children's test weariness.

**It is of interest to note that NPAT children scored highest on the Achievement Scale --the measure of general information and school-related skills. Future research might address the issue of whether enhanced school-related performance at age three continues to demonstrate its effects when the child is of school age.

TABLE 3. SIGNIFICANT DIFFERENCES BETWEEN NPAT AND COMPARISON CHILDREN ON SUBTESTS OF THE KABC SCALES

Sequential Processing Scale:	
Hand Movements Subtest	ns*
Number Recall Subtest	ns
Simultaneous Processing Scale:	
Magic Windows Subtest	.006
Face Recognition Subtest	.01
Gestalt Closure Subtest	ns
Achievement Scale:	
Expressive Vocabulary Subtest	<.001
Faces & Places Subtest	ns
Arithmetic Subtest	.02
Riddles Subtest	<.001

*Nonsignificant Differences

extent of the missing data problem resulting from the scoring procedures is displayed for NPAT and comparison groups by scale. Neither for the Simultaneous Processing Scale nor for the Achievement Scale did the amount of missing data differ significantly between groups. Therefore, we can conclude that the Sequential Processing scores for comparison children suffer differential attrition; scores on the Simultaneous and Achievement Scales do not suffer similar distortion.

TABLE 4. NUMBER OF CHILDREN REFUSING OR FAILING ALL ITEMS

	NPAT (N=75)	COMPARISON (N=69)
KAUFMAN ASSESSMENT BATTERY		
Sequential Processing Scale:	3	10
Hand Movements	12	13
Number Recall	3	9
Simultaneous Processing Scale:	0	2
Magic Window	0	2
Face Recognition	0	5
Gestalt Closure	0	2
Achievement Scale:	4	4
Expressive Vocabulary	0	2
Faces and Places	1	2
Arithmetic	1	3
Riddles	2	9

A possible alternative interpretation of differential failure rates on the number of subtests is that NPAT children are simply more testwise given their history of being administered early screening devices. Since the KABC was the first test administered to children, it would be the most vulnerable to the effects of "testwiseness" (since all children would be acquiring test-taking skills as the testing progressed). To address the issue of perhaps pre-existing test-taking skill differences between NPAT and comparison children, analysis of covariance was employed using the initial subtests administered as covariates to adjust the means on subsequently administered subtests. These analyses revealed significant differences between the groups even after adjusting means for initial performance abilities. Thus, we conclude that NPAT children did not perform better on measures of the child's ability simply because they were more testwise.

Adjusting for Group Differences Due to Background Characteristics

Analysis of covariance was employed to analytically remove unwanted variation from the dependent variable due to differences between the NPAT and comparison group samples, thereby increasing measurement precision. Mother's

education and mother's age -- the characteristics on which samples significantly differed from each other -- were employed as covariates in this analysis. Once means were adjusted to correct for the impact of mother's education and age, a conventional analysis of variance was then performed on the "corrected" means.

The results of the analysis of covariance consistently revealed that after adjustment for pre-existing differences among groups, all measures of intelligence, achievement and language development maintained their high level of significance. That is, after adjusting for pre-existing differences between groups, NPAT children continue to significantly outperform comparison children on all measures. The one exception was the Sequential Processing Scale, which had not previously demonstrated significant differences between groups. The difference that remains after adjustment for initial differences is interpreted to be the effect of the NPAT project.

For the statistically-minded reader who is aware of the criticisms of the traditional ANCOVA method and its potentially biased adjustments for pre-existing differences, a LISREL analysis was performed (Joreskog and Sorbom, 1981). This result replicated the univariate analysis of variance with a covariate using a more precise covariance structure method. Both results indicate that parents' participation in the NPAT project significantly increases their child's intellectual, achievement and language ability above and beyond what can be explained by differences between groups on the socioeconomic advantage factor. A more detailed description of the rationale for and results of the LISREL analysis is contained in Appendix C.

DO CHILDREN OF NPAT PARTICIPANTS DEMONSTRATE MORE POSITIVE SOCIAL DEVELOPMENT?

Both parents and psychometrists were asked to rate aspects of the child's social development on separate questionnaires, each containing different items. The results are presented in separate sections below.

Parent Assessment of Child's Social Development

Overall results of the parent ratings of their child's social development reveal that on 30 of the 44 items, NPAT parents did not rate their children significantly differently than did parents of the comparison children (see Table 4 in Appendix B). Both groups were similar in rating their child's social development as very positive on the following dimensions:

- Helping with simple household tasks
- Greeting familiar adults spontaneously
- Responding to social contact made by familiar adults
- Showing anticipatory excitement
- Showing pleasure in frolic play
- Showing affection toward people, pets, or possessions

- Knowing his/her age
- Knowing his/her first and last names
- Dramatizing in play
- Being aware of differences between male and female
- Playing alongside another child

Both NPAT parents and parents of comparison children were similar in rating their child's social development as less positive on the following dimensions, listed in the order in which the behaviors were rated as being the most infrequently demonstrated aspects of their child's social development:

- Coping independently with peer aggression directed toward self
- Participating in competitive play activities
- Respecting the property rights of others
- Serving as leader in peer relationships
- Admitting responsibility for errors or wrongdoing
- Using adults to help in handling peer aggression directed toward self
- Following rules given by adult for playing simple childhood games
- Taking turns and sharing
- Recognizing another's need for help and giving assistance
- Comforting peers in distress
- Participating in new situations
- Showing sympathy toward others
- Initiating social contacts with peers in play

NPAT children were significantly more likely to be reported by their parents to more frequently demonstrate the following characteristics of positive social development according to their parents:

- Separating easily from parents
- Enjoying having simple stories read to them
- Describing his/her feelings
- Using a pronoun or his/her name to refer to himself/herself
- Imitating another child or children at play
- Choosing his/her own friends
- Using peers as resources
- Following directions related to daily routine
- Waiting his/her turn for teacher's or adult's attention
- Seeking alternatives without adult assistance when faced with problems
- Coping with criticism and teasing
- Engaging in adult imitation
- Differentiating present and future social roles

Children of parents who did not participate in the NPAT project were significantly more likely to be reported by their parents to more frequently demonstrate the following characteristics of positive social development than were children of NPAT participants:

- Enjoying play with other children*

Items theorized as measuring aspects of social development were then subjected to a factor analysis** to explore the structure of "social development". The results of this factor analysis are contained in Table 4 in Appendix B and reveal six dimensions of social development: (1) expression of feelings, (2) the inability to distinguish "self", (3) peer relations, (4) coping capabilities, (5) the inability to interact with adults, and (6) the inability to play. Significant differences between groups existed on four of the six scales: NPAT children were less likely to be reported by their parents as unable to distinguish a "self" identity; they were more likely to have positive adult relations and were more likely to be rated as having coping capabilities. Comparison children were rated by their parents as being less likely to demonstrate the inability to play than were the children of NPAT parents.

Psychometrists' Assessment of Child's Social Development

Psychometrists observed the social skills of each child tested. Since observations were limited to the typical two-hour testing period, their ratings were based on a more limited observational period than was true for parents' observations of social development. Some arguments may be made, however, that the ratings provided by psychometrists are less biased than what one would expect from parents.

Significant differences between NPAT and comparison children were evident on eight of the 21 rating items. NPAT children were more likely to be observed as having the following characteristics of social development:

- They responded more frequently to the psychometrist's praise or encouragement.
- They established eye contact more frequently.

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*Only on this one item did significantly more comparison groups parents respond affirmatively than did NPAT children. NPAT staff were queried about this finding, and suggested that NPAT parents have been trained to be more "critical" observers of their children and are capable of distinguishing between simple interest in another child and cooperative play. NPAT staff stressed to parents that "quality" play usually occurs closer to three years of age. It is cooperative play, and consists of sustained interactions over a period of time. "Quality" play goes beyond just showing interest in or reacting to the presence of another child; it involves initiating a contact with another child for the purpose of playing.

**A commonly used method for assessing the validity of hypothesized dimensions is to subject all items to a factor analysis. The objective of factor analysis is to obtain a more parsimonious set of variables (factors) based on an analysis of the correlations among the items and their subsequent linear combination.

- They smiled or laughed more frequently.
- They made friendly statements more frequently.
- They more frequently expressed physical affection towards the psychometrist.
- They were less likely to reject physical affection from the psychometrist.
- They easily followed directions with greater frequency.
- They smiled at their accomplishments more frequently.

These results are contained in Table 5 of Appendix B.

Factor analyses of the 21 items yielded six dimensions of social development as observed by the examiner: (1) coping capabilities, (2) expressing pride in accomplishments, (3) incapability for socially developed expressions, (4) coping incapabilities, (5) failure to use adults as instrumental resources, and (6) capability for basic expression of emotion to adults (see Table 6 in Appendix B). NPAT children and comparison group children did not differ significantly on any of these dimensions. Furthermore, contrary to theoretical expectations, none of the scales bore a relationship to the scales contained in the parents' assessment of social development. Thus, construct validity of social development was not obtained for the two methods of measurement.

DO NPAT CHILDREN HAVE FEWER UNDETECTED HEARING PROBLEMS?

NPAT and comparison families were questioned about their child's (1) history of ear fluid problems and (2) whether or not their child's hearing had been tested with an instrument. No significant differences were found on the reported frequency of ear fluid problems; however, NPAT parents were significantly more likely to report having had their child's hearing professionally tested than did parents of comparison children. No significant differences in responding to the whisper test were observed between groups. Almost all children successfully responded to the whisper test; thus, because this variable did not demonstrate variation, it was eliminated from further analysis.

Correlational analyses were conducted to investigate the relationships among the frequency of ear fluid problems, whether or not the child's hearing had been tested, and testing outcomes. None of the scales of the KABC or PLS demonstrated a relationship. However, one scale of the Parent Knowledge questionnaire demonstrated a relationship: the more knowledgeable parents were about the importance of physical stimuli in their child's development, the more likely they were to have their child's hearing tested. Additionally, children who had not had their hearing tested were significantly more frequently observed by the psychometrist as lacking in verbalization skills.

Whether or not parents had their child's hearing tested was positively and moderately related to their age and the mother's educational level. The frequency of the child's history of ear fluid problems was moderately and positively related to both the mother's and father's age. Neither income level nor single- vs. two-parent family characteristics bore a significant relationship.

ARE NPAT PARENTS MORE KNOWLEDGEABLE ABOUT CHILD-REARINC PRACTICES AND CHILD DEVELOPMENT?

Of the 34 items measuring parent knowledge of child development and child-rearing practices, 16 items demonstrated significant differences between NPAT parents and the parents of comparison group children. NPAT parents were significantly more knowledgeable about the following information:

- The inappropriateness of a rattle as a baby's first toy
- That commercial mobiles are not of great interest to babies during the first month of life
- That curiosity about surroundings does not occupy much of the baby's day during the first month of life
- That babies should be talked to even before they understand the meaning of words
- That babies learn best when you talk to them about what they are interested in at the moment
- That practice in head control is not provided by placing a baby on its back
- That stairs need not be totally gated to prevent accidents
- That babies less than one year of age can practice problem solving
- That discipline does not necessarily mean punishment
- That the attachment that forms between the baby and the primary caretaker is an important step in social development
- That a child between 8 and 14 months of age will repeatedly try a motor skill after it has been learned
- That children between 14 and 24 months like toys and objects they can manipulate rather than toys they can only watch
- That a two-year-old child becomes more interested in playing with other children
- That by age three, children usually understand most of the language they will use in ordinary conversation for the rest of their lives
- That a three-year-old child can usually put objects into categories by color, size, or shape
- That a freely swinging crib gym is not a desirable toy for an infant
- That a child understands words before s/he is able to speak

Comparison parents were significantly more likely to report that they "did not know" the response to items on the parent knowledge questionnaire. On average, nine percent of comparison parents reported they "did not know" the appropriate response, versus three percent of NPAT parents. Of those parents responding to the item, NPAT parents were significantly more knowledgeable about the items. Item-by-item comparison between the NPAT and comparison group are contained in Table 7 of Appendix B.

All NPAT parent knowledge items were then subjected to a factor analysis to identify structural dimensions of parent knowledge. The results of this factor analysis are contained in Table 8 of Appendix B, and reveal the following dimensions: (1) knowledge of the importance of physical stimuli, (2) intellectual development, (3) lack of knowledge of discipline, (4) knowledge of child development for three-year-olds, (5) hearing/motor development knowledge, and (6) knowledge of child development for children younger than three. For the sake of efficiency, these six scales of knowledge were utilized in subsequent analyses rather than using massive item-by-item analyses.

Parents who participated in the NPAT program were significantly more knowledgeable than comparison parents on four of the six scales. NPAT parents were more knowledgeable about the importance of physical stimuli in their child's development, about discipline, and about knowledge of child development, both of three-year-olds and children less than three years of age. On the remaining scales -- intellectual development and hearing/motor development knowledge -- no significant differences existed between groups.

The parents' level of knowledge was then investigated for its relationship to their child's level of performance. The more knowledgeable a parent was about a child's intellectual development, the better the child performed on measures of intelligence, achievement, and language ability. The less knowledgeable a parent was about discipline, the poorer the child performed on these measures.

Parent knowledge was also investigated for its relationship to background characteristics. No systematic relationships were revealed between any one of the background characteristics and the six dimensions of parent knowledge. Thus, there is no reason to believe that the acquisition of knowledge of appropriate child-rearing practices is in any way enhanced or impeded by the family's background characteristics.

WERE NPAT STAFF SUCCESSFUL IN INTERVENING IN "AT-RISK" SITUATIONS?

Throughout the duration of the three years of the project, NPAT project staff continuously observed and assessed the NPAT families and children to identify "at-risk" characteristics. At some point in time during the three years, one-fourth of the NPAT population of children was identified as "potentially at-risk." Examples of "at-risk" characteristics included delayed language functioning, hearing and speech problems, delayed gross motor development, inappropriate behavior, family stress, and delayed social skills.

Once these "at-risk" characteristics were identified, NPAT staff typically intervened by making referrals to medical persons or agencies for specialized services. By age three, over one-half of these "at-risk" characteristics of children or families were reported corrected or improved. An exit survey of NPAT parents revealed that, of those parents referred to medical professionals or for other specialized services, 95 percent reported receiving adequate assistance.

ARE CHARACTERISTICS OF "RISK" RELATED TO A CHILD'S DEVELOPMENT AT AGE THREE?

Traditional measures of "risk" or socioeconomic disadvantage (i.e., parents' age, education, income, single-parent families, number of siblings, and the amount of alternate care a child receives at various stages of development) were investigated for their relationships to intelligence, achievement, and language development. No relationships were found between a child's ability and whether the household was single-parent, contained additional siblings, or whether the child received alternate care during various developmental phases.

However, the parents' educational level was related to the child's intelligence, as measured by the Mental Processing Scale of the KABC. The

Achievement Scales of the KABC as well as the three scales of the PLS (i.e., Auditory Comprehension, Verbal Ability, and Language Ability) were similarly related to background characteristics, including mother's age, mother's and father's educational level, and the receipt of public assistance. Children of older mothers, having higher levels of education, and whose income is in excess of families who receive public assistance, tended to score somewhat better on measures of achievement and language development (see Table 9 in Appendix B).

For the NPAT population of children, parent educators identified children they observed to be "at risk" based on their observations of the family over three years. These observations were less easily quantified than traditional measures of risk, and included factors such as "family stress", poor quality of parent-child interactions, etc.

A comparison of the size of correlations for traditional risk characteristics and observed "at-risk" characteristics for the NPAT population is contained in Table 5. The assessments of "risk" by NPAT staff based on their observations were consistently and moderately related to all tested outcomes: children assessed as "at-risk" by NPAT staff performed more poorly on all measures of intelligence, achievement, and language development than did children who were not observed to be "at risk".

These findings may be interpreted in several ways. First, traditional measures of "risk" are frequently criticized on the basis that they are merely "proxies" for the obscure but more theoretically relevant dimensions of risk (e.g., stress). Second, because of the size and consistency of the relationship between observations of "at-risk" characteristics and children's ability, validity is lent to the belief that NPAT staff have become good observers of parents and can identify risk characteristics that may interfere with a child's development. Third, the consistent relationships between risk characteristics and testing outcomes provide support for the theoretical expectation that stress-producing situations can have rather direct and immediate impact on children's language development and achievement--even by age three. Finally, despite this ability to diagnose potential risk factors, not all situations that put children "at risk" can be corrected with a parent education program.

IS THE EXTENT TO WHICH PARENTS PARTICIPATED IN THE NPAT PROGRAM RELATED TO PROJECT OUTCOMES?

NPAT staff provided measures of parents' levels of participation in NPAT activities during their approximately three years of involvement with the NPAT program. Measures of participation included the number of group meetings attended, the number of private visits completed, the NPAT parent educator's assessment of the quality of the home visit, and the ease with which the parent could be contacted. On the average, the sample of NPAT participants attended 13 group meetings (range = 0 to 33) and completed an average of 23 private visits with parent educators (range = 1 to 44).

Correlational analyses were performed to investigate the relationship of parent participation in NPAT activities over three years and their children's performance on tests of intelligence, achievement, and language development. These analyses revealed that the NPAT staff ratings of the quality of home visits demonstrated a consistent and positive relationship to all scales

TABLE 5. INTERCORRELATIONS OF "RISK" CHARACTERISTICS AND OUTCOME MEASURES
NPAT Population Only

	Mother's Age	Mother's Education	Receipt of Financial Assistance	Single- vs Two-Parent Family	Siblings	Amount of Alternate Care	Observation of "At" Risk Characteristics
KAUFMAN ASSESSMENT BATTERY							
Sequential Processing	0.21	0.30	-0.18	0.15	-0.07	0.02	-0.35
Simultaneous Processing	0.03	0.01	-0.12	0.09	-0.24	-0.01	-0.29
Mental Processing Composite	0.09	0.17	-0.16	0.11	-0.16	0.01	-0.33
Achievement	0.08	0.32	-0.23	0.18	-0.14	-0.09	-0.34
ZIMMERMAN PLS							
Auditory Comprehension	0.18	0.22	-0.27	0.26	-0.16	-0.04	-0.37
Verbal Ability	0.22	0.31	-0.32	0.26	-0.22	-0.11	-0.34
Language Ability	0.21	0.29	-0.32	0.30	-0.20	-0.08	-0.41

measured by the KABC and the PLS. The higher the quality of parent participation in NPAT, the better children performed on all testing measures. These findings provide additional support that participation in the NPAT program has rather direct effects on children's abilities.

Parent participation in NPAT was then investigated for its relationship to children's social development. The more frequent the private visits, the more likely were examiners to report observations of children's pride in accomplishment, and the more likely were parents to report their children capable of the expression of feelings. Similarly, the quality of these home visits was related to aspects of the child's social development. NPAT staff ratings of high-quality home visits were positively related to the examiner's observation of the child's coping capabilities, were negatively related to an inability to interact with adults, and were negatively related to an inability to play with peers.

Finally, parent participation was investigated for its relationship to parent knowledge of child development. Parents who attended group meetings with greater frequency were more knowledgeable of both the importance of physical stimuli and hearing/motor development knowledge. These results are contained in Table 10 of Appendix B.

DO PARENTS WITH CERTAIN BACKGROUND AND FAMILY CHARACTERISTICS TEND TO BE "BETTER" NPAT PARTICIPANTS?

Background characteristics and NPAT staff assessments of "at-risk" characteristics were investigated for their relationship to the degree of parental participation in the program. Older parents and mothers with higher levels of education were more likely to attend more group meetings than younger parents or mothers with less education (correlations ranged from .25 to .40). Mother's age and educational level bore no relationship to the number of private visits held; however, families with older fathers were more likely to attend more private meetings (r=.29). The quality of NPAT contacts was much more likely to be rated as "high quality" for older parents, for mothers with higher levels of education, and for two-parent households (correlations ranging from .24 - .38). The rated dependability of the family in meeting scheduled appointments and the ease with which they could be contacted were largely related to whether the household was two-parent (r=.49).

Parents who utilized alternate child care more frequently had fewer private visits and attended fewer group meetings. They were reported by NPAT staff as being significantly more difficult to contact, and the quality of the contacts was rated more poorly.

Finally, NPAT staff assessments of "at-risk" characteristics were investigated for their relationship to program participation. Families assessed as "at-risk" participated in the program with similar frequency as did families not assessed to be "at risk", possibly due to the efforts of NPAT staff to meaningfully involve "at-risk" families in program activities. Despite similar levels of participation, however, "at-risk" families were rated as having a lower quality of participation (r=.30).

DOES NPAT PARTICIPATION IMPACT ON PARENTS' PERCEPTIONS OF THE SCHOOL DISTRICT?

During the parent interview, parents were questioned on their perception of how responsive their school district is to the needs of children. Participating NPAT parents were more likely to regard their school district as responsive to their child's needs than were parents of comparison group children: 53 percent of parents rated their district as "very responsive", versus 29 percent of comparison group parents. Probably due to their lack of involvement with the school district compared to NPAT parents, more than 40 percent of parents of comparison children reported they had no opinion, versus 10 percent of NPAT parents. Less than three percent of both NPAT and comparison group parents rated their school district as "unresponsive" or "very unresponsive". Thus, NPAT parents were more likely to have an opinion about the quality of the school district in which their first-born three-year-old child resided.

DO NPAT PARTICIPANTS HAVE POSITIVE FEELINGS ABOUT THE PROGRAM'S USEFULNESS?

After the first year of program operations, NPAT staff conducted a survey of NPAT participant perceptions of NPAT services in order to obtain feedback and improve the quality of their services.

As independent evaluators for the NPAT project, Research & Training Associates, Inc., sent the identical five-point response questionnaire to parents who had participated in the NPAT project to assess their feelings about the program's usefulness. The results of this questionnaire are contained in Table 11 of Appendix B. The response rate for return of the first questionnaire was more than 90 percent, the response rate for the second questionnaire was 50 percent --somewhat lower than the desired 60 percent rate.*

Of NPAT participants responding at the end of Year Three, 99 percent reported that the information given to them about the project, its services, and level of participation was accurate and informative. Eighty-two percent of the parents felt it was best to begin participating in this kind of project one to three months before the child's birth.

Home visits were rated as the most helpful project service; 97 percent of the parents felt these visits made a difference in their parenting role. Group meetings were rated by 93 percent of the respondents as helpful (moderately helpful to very helpful); 92 percent of the participants felt these group meetings made a difference in their roles as parents. Parents reported more difficulty in keeping the appointments for the group meetings (40 percent) than the home visits (three percent).

Project participants also found the screening information helpful in regard to their baby's growth. Of the one-third of parents responding who were referred by parent educators to medical persons or agencies for specialized services, 95 percent reported receiving adequate help.

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*Different procedures utilized in the administration of the two questionnaires may be responsible for the lowered response rate. The first questionnaire was hand delivered to participants at a time when parents were still actively participating in the project. The second questionnaire was sent to respondents after many of them had already terminated their participation.

These results were almost identical to results of the Year One Questionnaire. Two notable exceptions were found. After Year One, 66 percent of parents referred to other agencies reported having received adequate help, versus 95 percent after Year Three. Apparently, NPAT staff improved their referral and follow-up procedures after the first year of operations. Second, NPAT parents changed in their perceptions of the most helpful aspect of the program. After Year One, 73 percent felt that group meetings were most helpful and 26 percent felt that home visits were most helpful. After Year Three, 23 percent reported group meetings to be most helpful, and 77 percent felt home visits were most helpful. One possible interpretation of this change in perception is that in the first year, NPAT staff were not as familiar to parents and their presence in the home may have been uncomfortable. By the third year of the program, positive and supportive relationships had been established.

SUMMARY OF FINDINGS

- Children of parents participating in the New Parents As Teachers Project (NPAT) consistently scored significantly higher* on all measures of intelligence, achievement, auditory comprehension, verbal ability, and language ability than did comparison children. NPAT children scored seven scores higher than did comparison children on the intelligence (mental processing) scale of the Kaufman Assessment Battery for Children (KABC). They scored more than 10 scores higher on measures of achievement on the KABC, the measure of general information, and school-related success; and they scored more than six scores higher on measures of language ability (Zimmerman's Preschool Language Scale). NPAT children scored the highest on the Achievement Scale--the measure of general information, and school-related success. In fact, adding an additional 18 children from disadvantaged socioeconomic backgrounds to the original 75 NPAT children still yielded NPAT gains in achievement in excess of 10 scores above the comparison group. Furthermore, results controlling for socioeconomic advantage indicate that parents' participation in the NPAT project significantly increases their child's intelligence, achievement, and language ability.

- NPAT children demonstrated significantly more aspects of positive social development than did comparison children. NPAT children were more frequently reported by their parents as being able to distinguish a "self" identity, to have positive adult relationships, and to have coping capabilities.

- NPAT parents were significantly more likely to report having had their child's hearing professionally tested by three years of age than were parents of comparison children. Children who had not had their hearing tested were more frequently observed by the psychometrist during testing as lacking in verbalization skills.

- NPAT parents were significantly more knowledgeable than comparison group parents about the importance of physical stimuli in their child's development, about discipline, and about knowledge of child development both of three-year-olds and children less than three years of age.

- Relationships between "traditional measures of risk" (parents' age, education, income, single-parent families, numbers of additional siblings, and the amount of alternate care a child is provided) bore little or no relationship to measures of intelligence, achievement, and language development. The assessments of children "at risk" by NPAT staff (e.g. family stress, delayed gross motor development, and inappropriate behavior) were significantly and consistently related to all tested outcomes: children assessed as "at-risk" performed more poorly on all measures of intelligence, achievement, and language development than did children who were not observed to be "at risk".

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*Probability levels for statistical significance are commonly accepted at the .05 level. Most findings for this study were found to be significant at the <.001 level. This means that there is a less than one in one-thousand probability that the differences between NPAT and comparison groups were due to chance.

- One-fourth of the NPAT population of children were identified as "potentially at risk" at some point during the three-year project. Once these "at-risk" characteristics were identified, NPAT staff typically intervened by making referrals to medical persons or agencies for specialized services. By age three, over one-half of these "at-risk" characteristics of children or families were reported corrected or improved.

- The higher the NPAT staff rated the quality of parent participation in the NPAT project, the better children performed on all testing measures. The higher the rated quality of parent participation in home visits, the more likely were NPAT children to demonstrate positive aspects of social development, including coping capabilities and the ability to interact with adults.

- The greater the frequency of parent participation in home visits, the more likely were children to demonstrate positive aspects of social development, including pride in accomplishment and capability for expressing emotions. Parents who attended group meetings with greater frequency were more knowledgeable of both the importance of physical stimuli and hearing/motor development knowledge.

- Participating NPAT parents were more likely to regard their school district as responsive to their child's needs than were parents of comparison group children: 53 percent of parents rated their district as "very responsive", versus 29 percent of comparison group parents. Possibly due to the lack of involvement of comparison group parents with the school district compared to NPAT parents, more than 40 percent reported they had no opinion of the school district, versus only 10 percent of NPAT parents.

- Nearly 100 percent of NPAT participants reported a high degree of satisfaction with each of the project services, including group meetings, private home visits, and screenings. Although all services were highly rated, home visits were rated as the most helpful project service. Almost all parents felt that project services made a difference in the way they perceived their parenting role. Project participants also found the screening information helpful in regard to their child's growth. Of the one-third of parents responding who were referred by NPAT staff to medical persons or agencies for specialized services, 95 percent reported receiving adequate help.

APPENDIX A

CORRELATIONAL PROPERTIES OF THE KABC AND PLS SCALES

Although the KABC is a relatively new measure of achievement and cognitive ability, a considerable amount of psychometric work assessing the validity and reliability of its scales had been published (see Kaufman and Kaufman, Interpretive Manual, 1983 and Buttonwood Farms Inc, 1984 for review and criticisms).

Scales and subtests of the KABC and the PLS were correlated to investigate the similarity between the intercorrelations for a select population within a state as compared to the published results based on a nationally representative population.

Theoretical goals in developing the KABC hypothesized two modes of information processing -- sequential and simultaneous -- as related yet distinct aspects of global intelligence. The Kaufmans' findings of a .36 correlation for the population of three-year-olds is similar to the .29 correlation demonstrated by this study's sample. Slightly lower correlations were obtained than the .50 sequential and .66 simultaneous processing correlations to the achievement scale -- although they still were of roughly the same magnitude. Thus, correlations obtained with this study's sample corroborate the notion that there exists a substantial relationship between information-processing and school-related achievement.

Table 1 shows the intercorrelations of the Kaufman Battery Scales and Subtests for this population of three-year-olds. The Kaufmans report moderate intercorrelations among Mental Processing subtests (average of .31) for three-year-olds, which implies that each subtest measures a somewhat different task. This study found a similar moderate relationship (average of .46).

For three-year-olds, the Kaufmans report correlations of .50 to .60 (average of .56) on the Achievement subtests. The results of testing for this population revealed correlations of .12 to .54 (average .33) on the Achievement subtests, which seem to indicate more task uniqueness of the subtests. The most notable difference on the Achievement Subtests between the Kaufmans' findings and this study is the Expressive Vocabulary subtest. The Kaufmans report a correlation of .33 between the Expressive Vocabulary subtest and the Sequential Processing Scale, a .50 correlation with the Simultaneous Processing Scale, a .52 correlation with the Mental Processing Composite, and a .78 correlation with the Achievement Scale. As illustrated in Table A-1 for the sample employed in this study, there was no correlation between Expressive Vocabulary and the Sequential Processing Scale, a .29 correlation with the Simultaneous Processing Scale, a .23 correlation with the Mental Processing Composite, and a .31 correlation with the Achievement Scale. All of these correlations indicate a substantially lower relationship for the Expressive Vocabulary subtest. Other relationships are of generally the same magnitude as reported by the Kaufmans.

Intercorrelations of the KABC and the PLS scales are contained in Table A-2, and indicate moderate to high correlations among scales (ranging from .43 to .78). The highest correlations obtained were among all PLS scales (i.e., auditory comprehension, verbal ability, and language ability) and the Achievement Scale of the KABC. However, sizable correlations did not exist between the PLS scales and the Mental Processing Composite (the Kaufmans' measure of intelligence).

TABLE 1. INTERCORRELATIONS OF KAUFMAN ASSESSMENT BATTERY SCALES AND SUBTESTS

	SEQUENTIAL	Hand	Number	SIMULTANEOUS	Magic	Face	Gestalt	MENTAL PROCESSING	ACHIEVEMENT	Vocabulary	Faces & Places	Arithmetic	Riddles
SEQUENTIAL PROCESSING:	1.00												
Hand Movements	0.72	1.00											
Number Recall	0.71	0.07	1.00										
SIMULTANEOUS PROCESSING:	0.29	0.33	0.18	1.00									
Magic Window	0.35	0.36	0.16	0.81	1.00								
Face Recognition	0.12	0.16	0.10	0.72	0.38	1.00							
Gestalt Closure	0.19	0.22	0.15	0.72	0.47	0.25	1.00						
MENTAL PROCESSING COMPOSITE	0.65	0.55	0.44	0.89	0.79	0.59	0.64	1.00					
ACHIEVEMENT:	0.40	0.29	0.38	0.59	0.58	0.40	0.37	0.63	1.00				
Expressive Vocabulary	0.00	0.00	0.08	0.29	0.20	0.29	0.22	0.23	0.31	1.00			
Faces & Places	0.27	0.20	0.22	0.39	0.43	0.27	0.25	0.42	0.68	0.22	1.00		
Arithmetic	0.41	0.43	0.26	0.55	0.50	0.42	0.33	0.55	0.78	0.12	0.44	1.00	
Riddles	0.44	0.25	0.41	0.43	0.44	0.29	0.27	0.53	0.81	0.19	0.44	0.54	1.00

A-2

TABLE 2. INTERCORRELATIONS OF KAUFMAN ASSESSMENT BATTERY SCALES AND ZIMMERMAN PLS SCALES

	SEQ	SIM	MEN	ACH	AUD	VER	LANG
KAUFMAN ASSESSMENT BATTERY:							
Sequential Processing	1.000						
Simultaneous Processing	0.288	1.000					
Mental Processing*	0.652	0.886	1.000				
Achievement	0.401	0.589	0.628	1.000			
ZIMMERMAN PLS:							
Auditory Comprehesion	0.428	0.577	0.614	0.729	1.000		
Verbal Ability	0.543	0.554	0.648	0.706	0.721	1.000	
Language Ability	0.524	0.614	0.681	0.777	0.924	0.931	1.000

*Scores are composites of two preceding scores (i.e. Sequential plus Simultaneous; Auditory plus Verbal).

A-3

TABLE 3. KAUFMAN ASSESSMENT BATTERY FOR CHILDREN
Definition of Global Scales and Subtests

Sequential Processing Scale - Solving problems where the emphasis is on the serial or temporal order of stimuli

Subtests:

Number Recall (a measure of sequential or successive processing)

- demands good attention span
- affected by distractibility and anxiety
- requires functioning within the auditory-vocal channel of communication and measures automatic auditory-vocal memory

Hand Movements (assesses motor functions)

- affected by distractibility, perseveration and anxiety
- requires good attention and concentration
- beneficial to develop some type of mediating strategy (e.g., verbally labeling each of three hand positions, finding a method for organizing the stimuli into a pattern)
- a visual-motor task--assesses the unique skill of motoric reproduction of a sequence

Simultaneous Processing Scale - Using a gestalt-like or holistic approach to integrate many stimuli to solve problems

Subtests

Magic Window (best measure of simultaneous processing for preschool children)

- involves a complex integration of spatial information presented temporally (measures hemispheric integration)
- facilitated by good concentration and an appropriate attention span
- depressed by impulsivity, distractibility, and inability to respond when uncertain
- measures mental functioning within the visual-vocal channel of communication
- requires integration of sequentially presented visual stimuli

Face Recognition (measures ability to attend closely to one or two faces whose photos are exposed briefly)

- requires good attention and concentration
- subject to the influences of distractibility and anxiety
- involves the visual-motor channel
- measures visual search and scanning strategies, face perception, and face recognition

TABLE 3 (cont.)

Gestalt Closure (measures ability to mentally "fill in the gaps" in a partially completed drawing)

- dependent on flexibility in perceiving and thinking and an alertness to the environment
- can be impaired by perseveration and inability to respond when uncertain
- measures intellectual ability within the visual-vocal channel
- assesses perceptual closure, perceptual inference, and conversion of abstract stimuli into a concrete object

Achievement Scale - Demonstrating knowledge of facts, language concepts, and school-related skills

Subtests

Expressive Vocabulary (measures ability to name objects)

- a visual-vocal ability
- a function of environmental opportunity, affected by richness of early environment, cultural opportunities at home, interests, and alertness to the environment

Faces and Places (measures ability to name the fictional character, famous person, or well-known place pictured)

- culture-loaded subtest to assess the degree that each child has been able to participate in the global culture and learn about it
- affected by richness of early environment, alertness, outside reading, T.V. watching, school learning
- visual-vocal channels

Riddles (measures a child's ability to infer the name of a concrete or abstract verbal concept when given several of the characteristics)

- assesses acquired conceptual information by demanding simultaneous synthesis of sequentially presented stimuli
- dependent on richness of early environment, alertness to the environment, cultural opportunities at home, and interests
- good attention and concentration facilitate success
- distractibility, perseveration, and impulsivity may hinder performance
- measures language concepts within the auditory-vocal channel of communication and assesses integration of sequentially presented auditory stimuli, conceptual inference, and logical classification

APPENDIX B

TABLE 1. PSYCHOMETRISTS' OBSERVATIONS OF TESTING BEHAVIOR BY NPAT AND COMPARISON GROUP

1. TASK PERSISTENCE

	refuses	attempts task after much encouragement	attempts task briefly	persists with task	probability
NPAT	9	16	34	41	.04
COMPARISON	21	20	26	33	

2. ATTENTION SPAN

	easily distracted	some distraction with noise or movement of others	attends well to direction	focuses attention voluntarily	
NPAT	17	28	33	22	ns*
COMPARISON	24	30	27	16	

3. BODY MOVEMENT

	out of seat body constantly in motion	much movement	some squirming	sits quietly	
NPAT	18	29	39	13	ns
COMPARISON	24	24	37	13	

4. ATTENTION TO DIRECTIONS

	plunges ahead immediately	plunges ahead after hearing only portion	attends only to brief directions	listens to entire directions	
NPAT	4	21	36	39	ns
COMPARISON	9	23	30	34	

5. COMPREHENSION OF DIRECTIONS

	does not appear to comprehend	partial comprehension	understands after repetition	rapid comprehension of most directions	
NPAT	0	17	33	50	ns
COMPARISON	0	17	41	40	

6. VERBALIZATION

	extremely reluctant	responds only when spoken to	occasional comments	spontaneous	
NPAT	1	4	13	80	.01
COMPARISON	7	4	26	63	

7. RAPPORT

	very fearful	shy	friendly but reserved	immediately friendly	
NPAT	1	12	36	51	.01
COMPARISON	10	20	33	37	

8. CONFIDENCE

	very uncertain needs much encouragement	reluctant to try new or different things	attempts new things with encouragement	very sure of self	probability
NPAT	7	21	34	38	ns
COMPARISON	11	26	33	29	

*Nonsignificant Differences

TABLE 2. FACTOR SCALES AND LOADINGS*
FOR PSYCHOMETRISTS' OBSERVATIONS OF TESTING BEHAVIOR

Factor 1. LACK OF BODY MOVEMENT

0.91 Lack of body movement
0.79 Attention span
0.75 Attention to directions

Factor 2. CONFIDENCE AND RAPPORT

0.88 Confidence
0.85 Rapport
0.68 Task persistence

Factor 3. COMPREHENSION OF DIRECTIONS

0.95 Comprehension of directions

Factor 4. LACK OF VERBALIZATION SKILLS

-0.95 Verbalization

*Factor loadings range from -.99 to +.99; the higher the loading, the more important the item is in describing the factor.

TABLE 3. PARENT OBSERVATIONS OF CHILD'S SOCIAL DEVELOPMENT BY NPAT AND COMPARISON GROUP (Percentage Distributions)

	NOT YET	OCCASIONALLY	FREQUENTLY	PROBABILITY
ADULT INTERACTION:				
1. Helps with simple household tasks.				
NPAT	0	24	76	ns*
COMPARISON	0	32	68	
2. Greets familiar adults spontaneously.				
NPAT	1	7	92	ns
COMPARISON	2	5	94	
3. Responds to social contact made by familiar adults.				
NPAT	1	10	89	ns
COMPARISON	0	10	90	
4. Separates easily from parents.				
NPAT	1	24	75	.001
COMPARISON	5	52	44	
EXPRESSION OF FEELINGS/AFFECT:				
5. Shows anticipatory excitement.				
NPAT	0	10	90	ns
COMPARISON	0	6	94	
6. Shows pleasure in frolic play.				
NPAT	0	4	96	ns
COMPARISON	0	0	100	
7. Shows affection toward people, pets, or possessions.				
NPAT	0	4	96	ns
COMPARISON	0	3	97	
8. Enjoys playing with other children.				
NPAT	0	17	83	.03
COMPARISON	0	5	95	
9. Enjoys having simple stories read.				
NPAT	0	6	94	.02
COMPARISON	2	16	82	

*Nonsignificant Differences

TABLE 3 (cont.)

	NOT YET	OCCASIONALLY	FREQUENTLY	PROBABILITY
10. Shows sympathy toward others.				
NPAT	1	33	65	ns
COMPARISON	2	31	66	
11. Comforts peers in distress.				
COMPARISON	8	42	50	ns
NPAT	2	47	52	
12. Describes his/her feelings.				
NPAT	4	39	57	.02
COMPARISON	6	56	35	
SELF-CONCEPT:				
13. Uses pronoun or his/her name to refer to self.				
NPAT	0	7	93	.001
COMPARISON	3	24	73	
14. Speaks positively of self.				
NPAT	0	13	87	ns
COMPARISON	3	15	82	
15. Knows his/her age.				
NPAT	0	10	90	ns
COMPARISON	0	5	95	
16. Know his/her first and last names.				
NPAT	0	7	93	ns
COMPARISON	2	3	95	
PEER INTERACTION:				
17. Initiates social contacts with peers in play.				
NPAT	1	33	65	ns
COMPARISON	0	31	69	
18. Imitates another child or children at play.				
NPAT	1	31	68	.02
COMPARISON	11	35	53	
19. Plays alongside another child.				
NPAT	1	21	78	ns
COMPARISON	0	27	71	

TABLE 3 (cont.)

	NOT YET	OCCASIONALLY	FREQUENTLY	PROBABILITY
20. Participates in group play.				
NPAT	3	31	67	ns
COMPARISON	6	23	71	
21. Has special friends.				
NPAT	6	18	76	ns
COMPARISON	13	18	69	
22. Chooses his/her own friends.				
NPAT	8	29	61	.01
COMPARISON	27	32	40	
23. Plays cooperatively with peers.				
NPAT	3	40	57	ns
COMPARISON	2	40	56	
24. Takes turns and shares.				
NPAT	1	57	42	ns
COMPARISON	3	61	35	
25. Participates in competitive play activities.				
NPAT	25	42	33	ns
COMPARISON	18	52	31	
26. Uses peers as resources.				
NPAT	10	53	37	.04
COMPARISON	23	50	26	
27. Gives ideas to other children as well as going along with their ideas.				
NPAT	7	38	54	ns
COMPARISON	11	39	50	
28. Serves as leader in peer relationships.				
NPAT	10	43	46	ns
COMPARISON	18	44	37	
COPING:				
29. Generally follows directions related to daily routine.				
NPAT	0	21	79	.01
COMPARISON	3	40	56	

TABLE 3 (cont.)

	NOT YET	OCCASIONALLY	FREQUENTLY	PROBABILITY
30. Follows rules given by adult for playing simple childhood games.				
COMPARISON	4	36	58	ns
NPAT	13	40	47	
31. Waits his/her turn for teacher's or adult's attention.				
NPAT	3	67	29	.001
COMPARISON	18	68	13	
32. Seeks alternatives without adult assistance when faced with problem.				
NPAT	3	58	39	.01
COMPARISON	15	63	23	
33. Copes with criticism and teasing.				
NPAT	18	47	33	.05
COMPARISON	34	42	24	
34. Participates in new situations.				
NPAT	3	42	54	ns
COMPARISON	3	39	58	
35. Uses adults to help in handling peer aggression directed toward self.				
NPAT	6	47	47	ns
COMPARISON	11	50	39	
36. Copes independently with peer aggression directed toward self.				
NPAT	13	68	19	ns
COMPARISON	21	63	16	
SOCIAL ROLE:				
37. Dramatizes in play.				
NPAT	0	11	89	ns
COMPARISON	5	15	81	
38. Is aware of differences between male and female.				
NPAT	1	8	90	ns
COMPARISON	2	16	82	
39. Engages in adult imitation.				
NPAT	0	14	86	.04
COMPARISON	2	26	73	

TABLE 3 (cont.)

	NOT YET	OCCASIONALLY	FREQUENTLY	PROBABILITY
40. Recognizes another's need for help and gives assistance.				
NPAT	1	40	57	ns
COMPARISON	2	52	47	
41. Respects property and rights of others.				
NPAT	3	68	29	ns
COMPARISON	15	56	29	
42. Recognizes feelings of others.				
NPAT	0	40	60	ns
COMPARISON	3	31	66	
43. Differentiates present and future social roles.				
NPAT	12	42	46	.002
COMPARISON	32	42	26	
44. Admits responsibility for errors or wrongdoing.				
NPAT	7	51	42	ns
COMPARISON	10	48	42	

TABLE 4. FACTOR SCALES AND LOADINGS*
FOR PARENT OBSERVATIONS OF SOCIAL DEVELOPMENT

Factor 1. EXPRESSION OF FEELINGS

0.77	Shows sympathy toward others.
0.72	Comforts peers in distress.
0.68	Recognizes another's need for help and gives assistance.
0.65	Recognizes feelings of others.
0.46	Shows pleasure in frolic play.
0.45	Shows anticipatory excitement.

Factor 2. INABILITY TO DISTINGUISH SELF

-0.66	Engages in adult imitation.
-0.62	Plays alongside another child.
-0.62	Imitates another child or children at play.
-0.57	Dramatizes in play.
-0.50	Is aware of differences between male and female.
-0.48	Uses pronoun or his/her name to refer to self.

Factor 3. PEER RELATIONS

0.68	Has special friends.
0.66	Chooses his/her own friends.
0.60	Uses peers as resources.
0.51	Copes independently with peer aggression directed toward self.

Factor 4. COPING CAPABILITIES

0.65	Respects property and rights of others.
0.60	Waits his/her turn for teacher's or adult's attention.
0.53	Uses adults to help in handling peer aggression directed toward self.
0.49	Copes with criticism and teasing.
0.48	Helps with simple household tasks.
0.44	Takes turns and shares.

Factor 5. INABILITY TO INTERACT WITH ADULTS

-0.82	Greets familiar adults spontaneously.
-0.80	Responds to social contact made by familiar adults.
-0.52	Shows affection toward people, pets, or possessions.

Factor 6. INABILITY TO PLAY

-0.73	Plays cooperatively with peers.
-0.59	Enjoys playing with other children.
-0.55	Participates in group play.

*Factor loadings range from -.99 to +.99; the higher the loading, the more important the item is in describing the factor.

TABLE 5. PSYCHOMETRISTS' OBSERVATIONS OF SOCIAL DEVELOPMENT BY NPAT AND COMPARISON GROUP (Percentage Distributions)

	NEVER OR ALMOST NEVER	INFREQUENTLY	OCCASIONALLY	FREQUENTLY (AT ALMOST EVERY OPPORTUNITY)	PROBABILITY
1. ADULT INTERACTION:					
A. Uses Adult as an Emotional or Instrumental Resource (after first determining s/he can't do it himself/herself).					
A1. Seeks explanation or information by asking for further clarification on test tasks.					
NPAT	37	29	29	5	ns*
COMPARISON	46	30	19	3	
A2. Asks examiner to actually do the task for him/her.					
NPAT	51	25	22	1	ns
COMPARISON	66	14	11	6	
A3. Asks for positive feedback on performance.					
NPAT	22	30	36	12	ns
COMPARISON	19	33	37	9	
A4. Shows reluctance to ask examiner for help when needed.					
NPAT	30	36	14	20	ns
COMPARISON	26	34	13	24	
A5. Seeks comfort or reassurance after unsuccessful performance on test task (either verbal or nonverbal).					
NPAT	24	42	25	9	ns
COMPARISON	24	37	21	13	
A6. Responds to examiner's praise or encouragement (either verbal or nonverbal).					
NPAT	0	5	38	57	.01
COMPARISON	9	6	43	41	
B. Capability for Expressing Emotion to Adults					
B1. Establishes eye contact.					
NPAT	0	0	18	82	.03
COMPARISON	3	1	26	69	
B2. Smiles or laughs.					
NPAT	1	4	17	78	.01
COMPARISON	9	7	23	60	

*Nonsignificant Differences

TABLE 5 (cont.)

	NEVER OR ALMOST NEVER	INFREQUENTLY	OCCASIONALLY	FREQUENTLY (AT ALMOST EVERY OPPORTUNITY)	PROBABILITY
B3. Makes friendly statements.					
NPAT	4	1	32	54	.04
COMPARISON	13	13	31	41	
B4. Physical expression of affection towards examiner - touching, patting, hugging, etc.					
NPAT	28	34	18	20	.05
COMPARISON	37	34	20	7	
B5. Shares or makes friendly gestures (such as taking examiner's hand).					
NPAT	25	33	26	14	ns
COMPARISON	33	33	26	7	
B6. Makes statement of personal dislike (e.g.,"I don't want to do that").					
NPAT	51	16	22	9	ns
COMPARISON	57	13	10	19	
B7. Demonstrates unprovoked out-of-control physical behavior (hits, grabs, throws objects, tantrums, etc.).					
NPAT	84	8	7	0	ns
COMPARISON	87	3	4	4	
B8. Rejects physical affection from examiner.					
NPAT	75	16	7	1	.05
COMPARISON	66	16	7	10	
2. COPING SKILLS:					
A1. Separates easily from parent(s).					
NPAT	7	17	24	51	ns
COMPARISON	19	9	30	41	
A2. Appears easily frustrated by errors or inability to perform tasks.					
NPAT	37	32	25	5	ns
COMPARISON	30	40	19	9	
A3. Participates readily in new testing situations.					
NPAT	5	13	32	49	ns
COMPARISON	13	16	27	43	
A4. Follows directions easily.					
NPAT	1	12	36	50	.04
COMPARISON	7	16	39	37	

TABLE 5 (cont.)

	NEVER OR ALMOST NEVER	INFREQUENTLY	OCCASIONALLY	FREQUENTLY (AT ALMOST EVERY OPPORTUNITY)	PROBABILITY
3. EXPRESSES PRIDE IN CREATIONS, POSSESSIONS OR ACTIONS:					
A1. Smiles at his/her accomplishments.					
NPAT	1	5	22	70	.01
COMPARISON	11	3	30	53	
A2. Asks examiner to "see" what s/he did.					
NPAT	29	32	16	22	ns
COMPARISON	39	30	16	13	
A3. Points to or shows examiner the results of his/her work.					
NPAT	22	34	18	24	ns
COMPARISON	29	34	17	17	

TABLE 6. FACTOR SCALES AND LOADINGS*
FOR PSYCHOMETRISTS' OBSERVATION OF SOCIAL DEVELOPMENT

Factor 1. COPING CAPABILITIES

0.74	Rejects physical affection from examiner.
0.73	Separates easily from parent.
0.64	Participates readily in new testing situations.
0.64	Follows directions easily.

Factor 2. EXPRESSES PRIDE IN ACCOMPLISHMENTS

0.93	Asks examiner to "see" what s/he did.
0.90	Points to or shows examiner the results of his/her work.

Factor 3. INCAPABILITY FOR EXPRESSING SOCIAL-DEVELOPED EXPRESSIONS

0.87	Smiles or laughs.
0.84	Smiles at his/her accomplishments.
0.65	Establishes eye contact.
0.64	Responds to examiner's praise or encouragement.
0.61	Makes friendly statements.

Factor 4. COPING INCAPABILITIES

0.74	Appears easily frustrated by errors or inability to perform tasks.
-0.66	Seeks comfort or reassurance after unsuccessful performance on test task.
-0.62	Makes statements of personal dislike.
0.59	Shows reluctance to ask examiner for help when needed.
0.52	Demonstrates unprovoked out-of-control physical behavior.

Factor 5. FAILURE TO USE ADULT AS INSTRUMENTAL RESOURCE.

-0.74	Asks for positive feedback on performance.
-0.68	Seeks explanation or information by asking for further clarification on test task.

Factor 6. CAPABILITY FOR BASIC EXPRESSION OF EMOTION TO ADULTS

0.85	Physical expression of affection towards examiner.
0.81	Shares or makes friendly gestures.

*Factor loadings range from -.99 to +.99; the higher the loading, the more important the item is in describing the factor.

TABLE 7. RESPONSES TO PARENT KNOWLEDGE QUESTIONNAIRE BY NPAT AND COMPARISON GROUP (Percentage Distributions)

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DON'T KNOW	PROBABILITY
1. Comforting a crying baby is important in the first few weeks of life.						
NPAT	89	11	0	0	0	ns*
COMPARISON	64	34	0	0	1	
2. "Crying it out" when an infant is unhappy or upset should be used only when nothing else works.						
NPAT	13	42	22	20	3	ns
COMPARISON	9	54	29	4	4	
3. A rattle should be a baby's first toy.						
NPAT	3	29	38	25	5	.001
COMPARISON	0	50	27	1	21	
4. Commercial mobiles are colorful and of great interest to babies during the first month of life.						
NPAT	13	30	28	28	1	.001
COMPARISON	49	33	16	0	3	
5. Curiosity about surroundings occupies much of the baby's day during the first month of life.						
NPAT	8	30	36	25	1	.001
COMPARISON	24	40	29	0	7	
6. A baby is not hurt by being left in his/her crib all day.						
NPAT	0	0	5	95	0	ns
COMPARISON	1	1	34	61	1	
7. It really doesn't make much sense to talk to babies before they understand the meaning of words.						
NPAT	0	0	3	97	0	.04
COMPARISON	3	0	10	84	3	
8. Babies learn best when you talk to them about what they are interested in at the moment.						
NPAT	59	32	7	3	0	.01
COMPARISON	31	44	11	1	11	
9. Practice can be provided in head control by placing the baby on its back one-half hour each day.						
NPAT	1	7	42	32	18	.001
COMPARISON	1	13	19	9	59	

*Nonsignificant Differences

TABLE 7 (cont.)

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DON'T KNOW	PROBABILITY
10. To prevent accidents, stairs must be totally gated.						
NPAT	25	26	32	16	1	.001
COMPARISON	44	36	13	4	3	
11. Babies less than one year old practice problem solving.						
NPAT	17	36	25	16	7	.02
COMPARISON	7	46	20	3	24	
12. A mild-to-moderate hearing loss will not affect language abilities of a child before three years of age.						
NPAT	1	4	22	68	4	ns
COMPARISON	1	1	30	59	9	
13. For the sake of safety, babies should be discouraged from crawling in the home.						
NPAT	0	0	7	93	0	ns
COMPARISON	1	0	23	74	1	
14. Accidents are the number-one cause of death and injury to young children.						
NPAT	41	53	0	1	5	ns
COMPARISON	27	49	9	3	13	
15. Discipline means punishment.						
NPAT	0	3	38	58	1	.02
COMPARISON	0	14	49	36	1	
16. The attachment that forms between the baby and the primary caretaker is an important step in social development.						
NPAT	74	25	0	0	1	.02
COMPARISON	44	47	1	0	7	
17. Since babies do not talk when they are very small, there is no need for parents to talk to them.						
NPAT	1	0	1	96	1	ns
COMPARISON	0	0	7	91	1	
18. When a child between eight and 14 months of age learns a new motor skill, s/he is content to try it once and move on to a new motor skill.						
NPAT	1	1	36	59	3	.01
COMPARISON	1	6	54	26	13	

TABLE 7 (cont.)

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DON'T KNOW	PROBABILITY
19. Because of possible accidents, a young child should not be allowed to explore and investigate his/her environment.						
NPAT	0	1	13	84	1	ns
COMPARISON	0	1	40	56	3	
20. Discipline involves setting limits as well as punishing a child for misbehavior.						
NPAT	22	66	8	3	1	ns
COMPARISON	20	74	4	0	1	
21. It is not important for a child to feel pride in his achievements until s/he starts elementary school.						
NPAT	3	1	3	92	1	ns
COMPARISON	1	0	11	86	1	
22. It is normal for a two-year-old child to oppose the will of his/her parents.						
NPAT	47	47	1	0	4	ns
COMPARISON	30	56	7	0	7	
23. Playing is simply a way of passing time for children and does not help their learning abilities.						
NPAT	1	0	11	87	1	ns
COMPARISON	1	0	20	77	1	
24. Children around the age of two will ask their parents for help if a task is too difficult.						
NPAT	18	64	16	0	1	ns
COMPARISON	6	70	19	1	4	
25. Children between 14 and 24 months like toys and objects they can manipulate rather than toys they can only watch.						
NPAT	55	42	0	1	1	.01
COMPARISON	34	49	11	0	6	
26. Parents do not need to worry about finding ways to encourage language skills.						
NPAT	0	3	26	70	1	ns
COMPARISON	0	1	36	60	3	
27. As a child approaches 24 months, s/he becomes more interested in playing with other children.						
NPAT	12	70	14	3	1	.02
COMPARISON	23	71	4	0	1	

TABLE 7 (cont.)

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DON'T KNOW	PROBABILITY
28. At age three, children are interested in make-believe games and pretend play.						
NPAT	71	28	1	0	0	ns
COMPARISON	39	56	4	0	1	
29. By age three, children usually understand most of the language they will use in ordinary conversation for the rest of their lives.						
NPAT	29	55	13	1	1	.001
COMPARISON	1	53	27	4	14	
30. A three-year-old can usually put objects into categories by color, size, or shape.						
NPAT	42	57	1	0	0	.01
COMPARISON	16	73	3	0	9	
31. Parents should encourage a child's expression of feelings.						
NPAT	72	25	1	0	1	ns
COMPARISON	47	51	0	0	1	
32. Injuries to the ear are the most common cause of minor and temporary hearing loss in young children.						
NPAT	12	30	26	12	20	ns
COMPARISON	7	26	23	3	41	
33. A freely swinging crib gym is a desirable toy for an infant.						
NPAT	5	30	32	21	12	.01
COMPARISON	4	36	23	9	29	
34. The child understands words before s/he is able to speak.						
NPAT	71	29	0	0	0	.02
COMPARISON	36	57	3	0	4	

TABLE 8. FACTOR SCALES AND LOADINGS FOR PARENT KNOWLEDGE QUESTIONNAIRE*

Factor 1. IMPORTANCE OF PHYSICAL STIMULI

0.79	Commercial mobiles are colorful and of great interest to babies during the first month of life.
0.60	A freely swinging crib gym is a desirable toy for an infant.
0.55	Practice can be provided in head control by placing the baby on its back one-half hour each day.
0.52	Curiosity about surroundings occupies much of the baby's day during the first month of life.
0.51	A rattle should be a baby's first toy.
0.51	To prevent accidents, stairs must be totally gated.

Factor 2. INTELLECTUAL DEVELOPMENT

0.78	Playing is simply a way of passing time for children and does not help their learning abilities.
0.71	Parents do not need to worry about finding ways to encourage language skills.
0.63	Since babies do not talk when they are very small, there is no need for parents to talk to them.
0.60	Because of the possible accidents, a young child should not be allowed to explore and investigate his/her home environment.
0.48	Discipline involves setting limits as well as punishing a child for misbehavior.

Factor 3. DISCIPLINE AND CONTROL

-0.74	Discipline means punishment.
0.56	Accidents are the number-one cause of death and injury to young children.
0.53	The attachment that forms between the baby and the primary caretaker is an important step in social development.
-0.46	It is normal for a two-year-old child to oppose the will of his/her parents.

Factor 4. DEVELOPMENTAL KNOWLEDGE OF 3-YEAR-OLDS

0.77	A three-year-old can usually put objects into categories by color, size, or shape.
0.71	At age three, children are interested in make-believe games and pretend play.

Factor 5. HEARING/MOTOR KNOWLEDGE

-0.67	A mild-to-moderate hearing loss will not affect language abilities of a child before three years of age.
-0.58	When a child between eight and 14 months of age learns a new motor skill, he/she is content to try it once and move on to a new motor skill.

Factor 6. DEVELOPMENTAL KNOWLEDGE OF CHILDREN < 3

0.69	Children around the age of two will ask their parents for help if a task is too difficult.
0.60	It really doesn't make much sense to talk to babies before they understand the meaning of words.

*See Table 7 for response categories.

TABLE 9. INTERCORRELATIONS OF BACKGROUND CHARACTERISTICS, TEST SCORES AND PARENT KNOWLEDGE SCALES

	FACTOR SCALES FOR FAMILY CHARACTERISTICS								
	Mother's Age	Mother's Education	Father's Age	Father's Education	Financial Assistance	Siblings	Single- vs Two-Parent Family	Frequency of Ear Fluid Problems	Hearing Tested
KAUFMAN ASSESSMENT BATTERY									
Sequential Processing	0.16	0.28	-0.01	0.28	-0.14	0.01	0.06	0.04	-0.02
Simultaneous Processing	0.14	0.15	0.09	0.12	-0.18	-0.09	0.11	-0.08	0.07
Mental Processing Composite	0.17	0.28	0.02	0.23	-0.18	-0.03	0.07	-0.06	0.01
Achievement	0.37	0.40	0.19	0.36	-0.27	0.02	0.26	-0.06	0.17
ZIMMERMAN PLS									
Auditory Comprehension	0.27	0.30	0.10	0.33	-0.25	-0.01	0.15	-0.05	0.08
Verbal Ability	0.27	0.35	0.12	0.35	-0.25	0.01	0.18	-0.01	0.05
Language Ability	0.29	0.35	0.12	0.37	-0.27	0.00	0.18	-0.03	0.07
PARENT KNOWLEDGE SCALES									
Importance of Physical Stimuli	0.19	0.25	0.07	0.17	-0.01	0.10	0.06	0.05	0.30
Intellectual Development	-0.15	0.06	-0.16	0.02	0.02	0.08	0.07	0.00	-0.11
Lack of Knowledge of Discipline	-0.16	-0.28	0.01	-0.13	0.12	0.04	0.05	-0.04	-0.15
Knowledge of Child Development for three-year-olds	0.14	0.13	0.15	0.20	-0.07	0.01	0.24	0.10	0.07
Hearing / Motor Development Knowledge	-0.05	-0.15	-0.02	-0.06	0.04	-0.02	0.14	-0.10	-0.15
Developmental Knowledge (under three years of age)	0.05	0.09	0.07	0.00	0.08	-0.01	-0.07	0.01	0.18

TABLE 10. CORRELATIONS BETWEEN MEASURES OF PARENTAL PARTICIPATION IN NPAT AND OUTCOMES

	Number of Group Meetings Attended	Number of Private Home Visits	Quality of Home Visits	Parents' Contactability
TESTING MEASURES				
Sequential Processing			0.29	
Simultaneous Processing		0.23		
Mental Processing			0.22	
Achievement		0.26	0.37	0.26
Auditory Comprehension			0.45	0.28
Verbal Ability			0.50	0.34
Language Ability			0.52	0.31
PARENTS KNOWLEDGE				
Knowledge of Importance of Physical Stimuli	0.33			
Developmental Knowledge of three-year-olds				0.27
Hearing/Motor Knowledge	0.30			
PSYCHOMETRISTS' ASSESSMENT OF SOCIAL DEVELOPMENT				
Coping Capabilities			0.24	
Pride in Accomplishments		0.21		
PARENTS' ASSESSMENT OF SOCIAL DEVELOPMENT				
Inability to Differentiate "Self"			-0.27	
Inability to Interact with Adults				-0.24
Inability to Play			-0.25	

TABLE 11. RESULTS OF YEAR THREE EXIT INTERVIEW
NPAT PARTICIPANTS ONLY

RESPONSE RATE

	Responded	Didn't Respond
Overall	50	50

1. Overall, I think the information I received about the project and its services when I signed up was:

	1 not at all accurate or informative	2	3 moderately accurate and informative	4	5 very accurate and informative
Overall	0.0	0.7	18.3	35.9	45.1

2. Overall, I think I was informed about my need to participate in home/private visits and group meetings:

	1 poorly informed	2	3 moderately informed	4	5 very well informed
Overall	0.0	0.7	15.5	26.1	57.8

3. Looking back, I think it would be best to begin participating in a project like this:

	1 - 3 Months Before Birth	A Few Days Before Birth	Right After Birth	1 - 3 Months After Birth	Other
Overall	82.4	2.8	7.8	5.6	1.4

4. How helpful were the home/private visits?

	1 not helpful	2	3 moderately helpful	4	5 very helpful
Overall	0.0	0.7	10.6	17.6	71.1

5. How easy was it to keep appointments for these visits?

	1 very difficult	2	3 moderately easy	4	5 very easy
Overall	0.7	2.1	16.2	33.1	47.9

TABLE 11 (cont.)

6. How easy was it to follow up on the topics discussed in the home/private visits?

	1 very difficult	2	3 moderately easy	4	5 very easy
Overall	0.0	2.1	19.0	41.1	38.7

7. Did what was discussed in these visits seem to make a difference in your role as a parent?

	1 very little difference	2	3 moderate difference	4	5 very much difference
Overall	0.7	2.1	21.8	35.9	39.4

8. As a result of the home/private visits my confidence as a parent increased:

	1 not at all	2	3 somewhat	4	5 greatly
Overall	0.0	1.4	14.1	36.6	47.9

9. How helpful were the group meetings?

	1 not helpful	2	3 moderately helpful	4	5 very helpful
Overall	2.9	4.4	39.9	22.5	30.4

10. How easy was it to keep appointments for the group meetings?

	1 very difficult	2	3 moderately easy	4	5 very easy
Overall	15.2	24.6	26.8	21.0	12.3

11. How valuable were the topics discussed in the group meetings?

	1 not at all valuable	2	3 moderately valuable	4	5 very valuable
Overall	1.5	0.0	23.9	32.1	42.5

12. Did what was discussed in these meetings seem to make a difference in your role as a parent?

	1 very little difference	2	3 moderate difference	4	5 very much difference
Overall	3.0	5.3	30.1	36.1	25.6

TABLE 11 (cont.)

13. Overall, as a result of the group meetings did your confidence as a parent increase?

	1 not at all	2	3 somewhat	4	5 greatly
Overall	2.3	6.0	30.1	33.1	28.6

14. Overall, how satisfied were you with the checkups on hearing/vision, the Denver Developmental Screening Test, and other screening measures?

	1 not at all satisfied	2	3 moderately satisfied	4	5 very satisfied
Overall	0.0	2.9	12.4	26.3	58.4

15. Overall, how helpful was the screening information in helping you to learn about your baby's growth?

	1 not very helpful	2	3 moderately helpful	4	5 very helpful
Overall	0.7	2.9	17.3	18.0	61.2

16. Were you referred by the parent educators to a medical person or an agency offering specialized services because of your concern about your child or as a result of screening?

	Referral		Received Adequate Help	
	YES	NO	YES	NO
Overall	29.5	70.5	95.1	4.9

17. Which project service was most helpful to you as a parent?

	Group Meetings	Home Visits	Screening
Overall	22.9	76.8	25.0

18. Which project service was least helpful to you as a parent?

	Group Meetings	Home Visits	Screening	No Response
Overall	46.5	4.9	10.6	38.0

*Totals do not equal 100 percent because some parents indicated more than one response to this question.

APPENDIX C

Results of LISREL Analysis

Traditional Analysis of Covariance (ANCOVA) corrections are widely considered to be inadequate adjustments for pre-existing differences between groups because observed variables only measure some of the traits on which groups differ, and thus suffer from misspecification bias (Rindskopf, 1981; Magidson and Sorbom, 1982; Campbell and Boruch, 1975; Weisberg, 1979; Campbell and Erlebacher, 1970). An additional criticism is that ANCOVA assumes perfect measurement on the covariates; since the covariates for socioeconomic advantage are imperfect measures of the factors, ANCOVA yields biased and inconsistent estimates of program effect. In the early analyses of Head Start, this bias meant that the program was interpreted to be ineffective and detrimental to the child's development.

In the past decade, there has been much progress in developing strategies for dealing with non equivalent groups when the sources of the differences are either unknown or unobserved. These models utilize a combination of multiple indicators and unobserved variables to adjust for differences between groups. Joreskog and Sorbom's (1981) Linear Structural Relations model -- LISREL -- is one of the most frequently applied latent trait structural models. The relatively recently developed methods provide more accurate measures of program effects by specifying the latent hypothesized predictor (socioeconomic advantage) and criterion factors (child's ability in terms of intelligence, achievement, and language development). Recent theoretical and computational advances now allow both the covariance structure and the mean structure to be analyzed simultaneously, thereby providing a measure of factor mean differences with the effect of latent covariates partialed out.

A LISREL multiple group covariance structure analysis was conducted to complement the ANCOVA analysis, where we hypothesized that there is a factor on which the two groups differ. This factor is assumed to be related to the quality of parenting that a child may receive, and has traditionally been referred to as "socioeconomic advantage". Several measurement models for the socioeconomic advantage latent trait were investigated in order to provide the best possible measurement. If the predictor variables cannot significantly predict the criterion variable, they are not suitable covariates and cannot explain any observed differences between the groups on the criterion. Mother's education, mother's age, *single- versus two-parent households, the family's eligibility for public assistance, whether another child had been born in three years, and the quantity of alternate care that a child received during various phases of the child's development were analyzed in the measurement of socioeconomic advantage. Only the indicators of mother's education, mother's age, and one- versus two-parent households were found to be significant measures of the hypothesized latent trait.

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*Father's age and education were not included in the analyses for two compelling reasons. First, the inclusion of too many variables in a model of this size leads to identification problems. Since father's age and education bore a moderately high relationship to mother's age and education, they would largely be redundant measures. Second, the inclusion of father's age and education would have eliminated the single- versus two-parent variable from analysis, since single-parent mothers generally did not provide this information on the child's father.

The LISREL analyses revealed that the structural path between socioeconomic advantage and child's ability was statistically significant, as assessed by a significant chi-square difference test and a significant t-ratio for that parameter.* Since the latent trait for socioeconomic advantage is a significant predictor of a child's ability, the effect of NPAT participation was assessed on means that have been adjusted for the significant socioeconomic advantage covariate. These analyses were conducted following the method described in LISREL V Manual (pp V17-V28). Analysis revealed that the NPAT and comparison groups did significantly differ on the socioeconomic advantage factor ($T = 4.05$; $p < .01$). The groups also differed on the factor of child ability, even after socioeconomic advantage was partialed out (chi-square difference = 5.35; 1 degree of freedom; $p < .05$). This result replicated the univariate analysis of variance with a covariate using a more precise covariance structure method. Both results indicate that parent participation in the NPAT project significantly increases a child's intellectual, achievement, and language ability above and beyond what can be explained by differences between groups on the socioeconomic advantage factor.

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*The final model utilized constrained the relationships between socioeconomic advantage and child's ability to be equal in each group, but allowed the error variances free to vary between the two groups. This proved to be an adequate representation of the covariance structure of the data.

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